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Skeptical Inquirer

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9/11
Conspiracy Theories Ten Years Later

The Top Theories
A Bestiary of 'Truthers'
Jesse Ventura's Conspiracies
'Messages' from the 9/11 Dead

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Examining 9/11 Conspiracy Theories

The brazen air attacks on the United States of September 11, 2001, brought out, for a time, the best in people—a new sense of unity, community, resolve, and determination. But eventually there emerged in certain quarters something else: a virulent strain of paranoia and distrust. Conspiracy theories arose and flourished, possibly the inevitable result of an act so heinous that it could cause our own powers of reason and rationality to flee. These conspiratorial views rejected the clear evidence that the attacks, using four of our own hijacked airliners against us (one attack foiled by courageous passengers), were carried out by al-Qaeda terrorists from the Middle East trained to do just what they did. Instead the view arose that the U.S. government had to have been complicit in some way—perhaps even responsible—and that the intense fires started by the impacts of fully fueled airliners couldn't have brought down the World Trade Center Twin Towers, requiring (in this logic) their demolition by previously implanted explosives.

As the tenth anniversary of 9/11 approaches, we offer a special issue examining these and other 9/11 conspiracy theories. Our articles have been in the works since last year, but they follow naturally from sociologist Ted Goertzel's January/February 2011 cover article, "The Conspiracy Meme: Why Conspiracy Theories Appeal and Persist." That article about the dynamics of conspiracy thinking brought vitriolic responses from 9/11 conspiracy theorists demonstrating just the kind of thinking Goertzel had described (see "A '9/11 Truth' Letter-Writing Campaign to SI," May/June 2011, p. 62).

Dave Thomas, a physicist, mathematician, and SI contributing editor, leads off this issue. In "The 9/11 Truth Movement: The Top Conspiracy Theory, a Decade Later," he provides a clear overview of the 9/11 Truth movement, examines three of its most enduring and oft-cited claims, and describes results of his own physics analysis of the progressive collapse of the Twin Towers. They agree well with previous results published in the technical literature and with the collapse as observed.

Social scientists Jamie Bartlett and Carl Miller of the U.K. think tank Demos then describe their own experiences with the 9/11 Truth movement following the release of their paper "The Power of Unreason." In their SI article, "A Bestiary of the 9/11 Truth Movement," they find that the response to their paper illustrates Goertzel's conspiracy theory meme in action: the 9/11 Truthers started with faulty misconceptions about the paper, which was "misrepresented in an exaggerated, distorted, and inaccurate way that was soon recycled and re-presented within the conspiracist community." The authors examine three subgroups of the movement, each accepting the conspiracy view for different reasons.

CSI Senior Research Fellow Joe Nickell switches gears to describe some of the *mystical* mythmaking among certain 9/11 survivors and friends. And a short piece by Deputy Editor Benjamin Radford describes a "skeptical smackdown" in which conspiracist Jesse Ventura repeatedly ignored critical challenges to some of his outrageous statements.

Will the death of Osama bin Laden—the mastermind of 9/11—at the hands of daring American commando forces on May 1, 2011, in Pakistan diminish the kinds of conspiratorial thinking examined in this issue? Dave Thomas briefly considers that, too. The initial evidence makes such a hope doubtful.

—Kendrick Frazier

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"...promotes scientific inquiry, critical investigation, and the use of reason in examining controversial and extraordinary claims."

Steven Novella Honored with CSI's Robert P. Balles Prize in Critical Thinking

The Committee for Skeptical Inquiry (CSI) has awarded its 2010 Robert P. Balles Annual Prize in Critical Thinking to Steven Novella.

Steven Novella, MD, is a clinical neurologist, assistant professor, and director of general neurology at Yale University School of Medicine, specializing in the treatment of ALS/myasthenia gravis and neuromuscular disorders.

One could easily assume that the demands of his professional life alone would keep him completely occupied, but not Novella. He seems to be one of those intensely driven and motivated people who manage to create more hours in a day. His biography and list of activities has only just begun:

He is the president and cofounder of the New England Skeptical Society. He is the host and producer of that group's popular weekly science podcast, *The Skeptics' Guide to the Universe.* He is also a fellow of CSI and a founding fellow of the Institute for Science in Medicine. He is a medical advisor to Quackwatch and an associate editor of the *Scientific Review of Alternative Medicine.*

Novella is the author of the *NeuroLogica* blog, which covers news and issues not only in neuroscience but also in general science, scientific skepticism, philosophy of science, critical thinking, and the intersection of science with the media and society.

Novella also contributes every Sunday to *The Rogues Gallery*, the official blog of *The Skeptics' Guide to the Universe*; every Monday to *Skepticblog*; and every Wednesday to *Science-Based Medicine*, a blog dedicated to issues of science and medicine. He also writes the new "The Science of Medicine" column in SKEPTICAL INQUIRER.

Novella has completed a twenty-four-lecture course with The Teaching Company, "Medical Myths, Lies, and Half-Truths: What We Think We Know May Be Hurting Us," available for purchase as audio CD, video DVD, or download.

In a letter to Novella informing him of his selection as the Balles Prize winner, CSI Executive Director Barry Karr wrote:

> I am pleased to inform you that you have been selected as the winner of the 2010 Robert P. Balles Annual Prize in Critical Thinking, presented by the Committee for Skeptical Inquiry and the SKEPTICAL INQUIRER magazine.
>
> You are being honored not for a particular article or publication. Instead, you are being honored for your tremendous body of work including *the Skeptics Guide to the Universe*, *Science-Based Medicine*, *Neurologica*, your SKEPTICAL INQUIRER column "The Science of Medicine," as well as your tireless travel and lecture schedule on behalf of skepticism. You may well be the hardest worker in all of skepticism today. And to me, the truly amazing thing is you do all of this on a volunteer basis. We are honored to present you with this award.

The Robert P. Balles Annual Prize in Critical Thinking is a $1,500 award given to the author of the published work or body of work that best exemplifies healthy skepticism, logical analysis, or empirical science. Each year, the Committee for Skeptical Inquiry selects the paper, article, book, or other publication that, in its judgment, has the greatest potential to create positive reader awareness of currently important scientific concerns.

This prize has been established through the generosity of Robert P. Balles, an associate member of CSI, and the Robert P. Balles Endowed Memorial Fund, a permanent endowment fund for the benefit of CSI.

The prize will be presented to Novella by Kendrick Frazier, editor of the SKEPTICAL INQUIRER and a member of CSI's executive council, at the Friday evening banquet during the CSI and SKEPTICAL INQUIRER CSIcon conference in New Orleans, October 28, 2011.

Steven Novella, MD

Previous winners of the Balles Prize:

2009: Michael Specter, staff writer at the *New Yorker* and former *New York Times* foreign correspondent, for his book *Denialism: How Irrational Thinking Hinders Scientific Progress, Harms the Planet, and Threatens Our Lives*

2008: Leonard Mlodinow, physicist, author, and professor at Caltech for his book *The Drunkard's Walk: How Randomness Rules our Lives*

2007: Natalie Angier, *New York Times* science writer and author of the book *The Canon: A Whirligig Tour of the Beautiful Basics of Science*

2006: Ben Goldacre for his weekly column, "Bad Science," published in *The Guardian* newspaper (United Kingdom)

2005: Shared by Ray Hyman, Joe Nickell, and Andrew Skolnick for their series of articles in the SKEPTICAL INQUIRER, "Testing 'The Girl with X-Ray Eyes'"

A Pantheon of Skeptics

THE PANTHEON OF SKEPTICS—a roster honoring late distinguished fellows of the Committee for Skeptical Inquiry (formerly CSICOP)—has been established, and twenty-seven outstanding scientists, scholars, writers, and investigators have been named to it.

The CSI(COP) executive council has long discussed how to keep before the public the names of the great, now-deceased skeptics who made extraordinary contributions to the causes of science and skepticism in the modern era. Some were already well established when CSICOP (the Committee for the Scientific Investigation of Claims of the Paranormal) was created in 1976 and became founding fellows; others were elected as fellows later.

The desire is to continue honoring these skeptics' contributions and to provide a sense of history about the modern skeptical movement.

The Pantheon of Skeptics was created and the names chosen for it selected at a meeting of the CSI executive council in Denver, April 1–2, 2011. They will be listed permanently at CSI's headquarters in Amherst, New York, and on its website at www.csicop.org. (Current fellows are also listed on the website and on the inside front cover of every issue of SI.)

Here are those chosen for the Pantheon of Skeptics:

GEORGE O. ABELL
astronomer

STEVE ALLEN
entertainer/author/critic

JERRY ANDRUS
magician and inventor

ISAAC ASIMOV
biochemist and science writer

ROBERT BAKER
psychologist

T.X. BARBER
psychologist

BARRY BEYERSTEIN
biopsychologist

BART J. BOK
astronomer

MILBOURNE CHRISTOPHER
magician and writer

FRANCIS H. CRICK
Nobel laureate biophysicist

L. SPRAGUE DECAMP
author and engineer

MARTIN GARDNER
author and critic

STEPHEN JAY GOULD
biologist and writer

D.O. HEBB
psychologist

SIDNEY HOOK
philosopher

PHILIP J. KLASS
aerospace writer and engineer

PAUL MACCREADY
scientist/engineer/inventor

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B.F. SKINNER
psychologist

STEPHEN TOULMIN
philosopher

Journal That Published Bem's Paper Rejects Attempt to Replicate It

KENDRICK FRAZIER

An unsuccessful attempt by three psychologists to replicate the results of Daryl Bem's recent study that notoriously claimed experimental evidence for precognition has been rejected by the same journal that published Bem's paper.

Bem's study was the subject of a detailed critique in the March/April 2011 SKEPTICAL INQUIRER by psychologist James E. Alcock, who found serious flaws negating its conclusions. Bem's paper has sparked similar criticism elsewhere in the psychological and skeptical communities.

British science journalist Ben Goldacre now reports in his "Bad Science" column in *The Guardian* that researchers Stuart J. Ritchie, Chris French, and Richard Wiseman re-ran three of Bem's backwards-causation experiments—and found no evidence of precognition. They submitted their negative results to the *Journal of Personality and Social Psychology*, the journal that published Bem's positive results. Goldacre reports that the journal rejected their paper out of hand. He describes their response this way: "'We never,' they explained, 'publish studies that replicate other work.'"

The SKEPTICAL INQUIRER independently confirmed the facts of the case and obtained the key correspondence involved.

The journal *Psychological Science* also rejected the paper; they weren't interested in mere failure to replicate either. The journal *Science* also rejected the replication paper but for a different reason: "Your results would be better received and appreciated by the audience of the journal where the Daryl Bem research was published."

"It's a catch-22," says psychologist Ray Hyman, professor emeritus of psychology at the University of Oregon and a noted scientific critic of parapsychology claims, including Bem's.

This latest incident highlights a serious problem for science in dealing with research on contentious claims. The so-called "publication effect" is a result of journals favoring research papers that report positive results over research with negative results. Replication is often held to be an essential part of the scientific method, but if in fact journals systematically decline to publish replication studies that come to negative conclusions, the truth falls behind.

The SKEPTICAL INQUIRER independently confirmed the facts of the case and obtained the key correspondence involved.

"Replication is of critical importance in science, especially with highly controversial results such as those of Bem," lead author Ritchie, of the University of Edinburgh psychology department, told the SKEPTICAL INQUIRER. Ritchie continued:

> We believe a blanket policy to reject without peer review any submissions which are "straight" replications . . . is problematic. This raises important issues. If the top journals actively discourage replications, it is possible that null results will either be published in journals with very small readerships or remain in file-drawers, never seeing the light of day.

Hyman agrees: "Because the backbone of scientific evidence rests with successful replications, this journal policy indicates that many unreplicable experiments continue to be accepted as the truth because the scientific and general public do not have access to many of the failed replications."

Do Tomatoes Love Music? Genodics and Proteodies

NICOLAS GAUVRIT

One often finds astonishing claims about music helping plants grow in both journal articles (e.g., Katherine Creathe and Gary E. Schwartz's "Measuring Effects of Music, Noise, and Healing Energy Using a Seed Germination Bioassay," *Journal of Alternative and Complementary Medicine*, February 2004) and in best sellers (such as Peter Tompkins and Christopher Bird's 1989 book *The Secret Life of Plants*). But one author, Joël Sternheimer, has tried to make these claims look scientific by referring to them as part of what he calls "genodics." Sternheimer not only claims that music aids in plant growth but that he has found a theoretical basis for the phenomenon. What's more, he claims he has unlocked specific melodies—which he calls "proteodies"—that will help tomatoes grow, keep them healthy in spite of diseases, and give them the ability to safely weather periods of drought.

Born in 1943, Sternheimer studied physics in France and then at Princeton University. Once he returned to Europe, he had a short career singing pop music under the name "Evariste." Having skills in both physics and music, he was the perfect man to invent genodics.

According to Sternheimer, it's all a matter of genetics and waves. Since DNA codes proteins, and proteins may help plants' growth and stimulate immunity, all you have to do is select the right sequence on the DNA molecules to make the proteins vibrate the right way. To do this, all you have to do is find the frequency that will make them reverberate. This idea is the very basis of genodics (see the official website at www.genodics.com). Moreover, Sternheimer claims—for reasons I don't understand—that a simple sound is not really sufficient: you're better off using a melody if you want to make the strongest effect on plants. So, genodics gives the key to the composition of specific melodies, called proteodies.

A claim as extraordinary as this one needs extraordinary proof. A patent for genodics was registered in 1984, almost three

decades ago (European patent number FR2541024[A1]). Scientists have had time to validate its claims—but it seems they haven't. No scientific publications are found in a search for "genodics" or "proteody" on GoogleScholar or PubMed. No scientific publication addressing the efficiency of genodics can be found on the Genodics Society website, despite the fact that the website contains an "articles about genodics" page.

Sternheimer accepts interviews now and then, so one may try to get information from the best source possible. In an amazing three-minute interview (in French, at www.dailymotion.com/video/xaw07l_joel-sternheimer-interview_tech), he describes an experiment he carried out in Senegal: Tomatoes were planted in two fields. In one field, silence was a rule. In the other, tomatoes had the privilege of listening to a three-minute proteody on a daily basis. What do you think happened? According to Sternheimer, the latter field was indeed more productive, supposedly producing twenty times more tomatoes than the control field. Moreover, despite the usual dryness of the country, tomatoes that had been exposed to the proteody were "stuffed with water." This revolutionary experiment, for some reason, was never published.

The end of the interview is more puzzling yet: "This process had been used by Africans in the old days. Farmers empirically discovered that singing made tomatoes grow, and they did sing, but they lost the habit of singing." As a skeptic, I cannot refrain from asking myself, "How could they lose that habit?" I just can't figure why farmers, in a poor country subjected to frequent malnutrition, would stop using a method that produced twenty times more tomatoes on average.

But hey, everybody knows that we skeptics don't believe anything.

Nicolas Gauvrit is a professor of mathematics at the Université d'Artois in Arras (France). He is a member of the editorial board of *Science . . . et Pseudo-Sciences*, the leading French skeptical review, and author of several books about science and reason.

'Psychic Detective' Noreen Renier Lambasted in Judge's Ruling

GARY P. POSNER

"[Noreen] Renier is a psychic who asserts that she has paranormal powers. [John] Merrell is a skeptic who believes that it is his moral charge to disprove the validity of those powers. The conflict between these parties makes Charles Dickens' *Bleak House* read like a novella." So begins page two of Judge William E. Anderson's March 21, 2011, order in the case of *Renier v. Merrell, United States Bankruptcy Court, Western District of Virginia, Lynchburg*.

Renier and Merrell have been at each other's throats off and on for more than a quarter century, appearing before nine judges across five states. They've argued over matters ranging from missing persons and a mysterious airplane crash to FBI endorsements, with various twists and turns worthy of Hollywood.

The world-renowned "psychic detective" had already gotten a sweetheart deal from Anderson in June 2010 when he ruled that Renier, who declared bankruptcy in 2007, would have to pay Merrell only $5,470 of the more than $40,000 he had been awarded in damages and legal fees when she violated a 1992 agreement that neither party would again publicly disparage the other. She had included two derogatory chapters about Merrell in her 2005 memoir, *A Mind for Murder* (subsequently withdrawn from the market and later reissued, absent those chapters, by another publisher; see my review in the September/October 2005 SI).

Not content to get away so lightly, with the ink barely dry on that ruling—which also contained a stipulation imposing a $30,000 penalty to be paid to the aggrieved party should either of them violate its prohibitions—Renier filed another complaint, alleging that postings remaining on Merrell's website were in violation and that she was thus entitled to the $30,000. A two-day hearing eventually ensued in Virginia on December 20–21, 2010 (see www.tampabayskeptics.org/v23n4rpt.html for my related article), and the judge's order was finally issued three months later.

When we get to page 5 of the order, we find this:

> The overwhelming problem with Renier's case [for the $30,000] is that this court did not find her . . . to be a credible witness. There are reasons for this conclusion, beyond her demeanor. First, she misled the court when she indicated that she intended to abide by [another directive in the 2010] order. . . . Renier stood not five feet away [from this bench] and agreed to abide. . . . Her [later] testimony . . . evidences that she did not intend at any time to abide by the memorialization of the court's words.

Judge Anderson further concludes that Renier "filed pleadings in an effort to begin [still more] litigation that would, she hoped, result in a $30,000 judgment in her favor against Merrell. This court is convinced that this is the only reason she agreed to the terms of [the 2010] order."

As we have occasionally reported in these pages over the years (most recently in the November/December 2008 SI), Renier and Merrell have been at each other's throats off and on for more than a quarter century, appearing before nine judges across five states. They've argued over matters ranging from missing persons and a mysterious airplane crash to FBI endorsements, with various twists and turns worthy of Hollywood. It all began when Renier was awarded $25,000 in a 1986 libel judgment against Merrell, after tricking him (by writing to him under an assumed name) into investigating some of her own "psychic" claims, which he then publicly characterized as "fraudulent." Merrell's own 1989 request to have that debt discharged by a bankruptcy judge (after guaranteeing full payment to his other creditors) was denied.

In Renier's initial 2007 bankruptcy pleading, she had declared barely $40,000 as her entire gross income for the preceding thirty-two months. Knowing that to be an impossibly lowball figure, Merrell uncovered evidence of additional income, resulting in Renier incrementally amending that figure upward, ultimately by more than $100,000. But information later obtained by Merrell via subpoena, and never taken into account by the court, documented an additional $30,000 in income, plus unknown assets being held in several unreported bank accounts and a safe deposit box. In addition, Story House Productions, producers of Court TV's *Psychic Detectives*, refused to honor its subpoena, which could have disclosed how much money Renier had received over those thirty-two months for her recurring appearances in that series.

During Judge Anderson's three months of reflection, he came to realize that "the jurisdiction of this [bankruptcy] court does not extend to every corner of the parties' ongoing dispute," and he therefore, in his new order, vacated his June 2010 order insofar as it relates to anything beyond the amount of money Renier's estate had to pay her creditors (with Merrell being her largest). Among his overreaching, now-defunct declarations in that 2010 order was this: "Merrell's co-author [yours truly] may continue [though Merrell may not] with the writing and publication of said book [about Renier, but] any mention of Merrell's name [in the book] shall constitute a breach." I had no intention of abiding by any such directive and wrote, in the Fall 2010 Tampa Bay Skeptics newsletter (of which I am editor), that the judge could "stick [that stipulation] where the moon don't shine."

By vacating his 2010 order, in which the $30,000 penalty had been memorialized, Judge Anderson has rendered moot Renier's chances of snaring the jackpot, though they were nil anyway for the above-discussed reasons relating to her credibility. Anderson takes a parenthetical swipe at Merrell's credibility as well, and goes on to opine that regarding their litigious history, "neither is capable of introspection [or] approaches matters concerning the other with even a modicum of reason," leaving him "not so naïve [as] to believe that the parties will now go their separate ways." To my mind, however, one of the parties occupies the higher (by far) moral ground and has more than a modicum of reason to be skeptical of the other's paranormal claims.

True to Anderson's prediction, Renier has now filed a forty-page appeal of the judge's ruling, arguing (in part) that the court erred "factually and legally in its assertions regarding [Renier's] credibility" and in vacating its 2010 order (with its $30,000 penalty to which Renier claims entitlement).

Gary Posner, MD, is founder of Tampa Bay Skeptics and a CSI scientific consultant. His extensive writings on Renier (and other topics) can be found at www.gpposner.com.

Jared Loughner, Conspiracy Fanatic

ROBERT SHEAFFER

Details are slowly emerging about Jared Loughner, the accused young gunman in January's horrific shootings and murders in Tucson, Arizona. While much political blame has been assigned, the truth seems to be that Loughner neither belonged to nor sympathized with any organized or even halfway-organized political group. Unlike the writings of the Unabomber, Loughner's incoherent political screeds reveal no consistent political vision. What they do reveal is a mind deeply steeped in conspiracy belief.

Loughner's YouTube videos (which are actually more like PowerPoint presentations accompanied by music) clearly reveal his conspiracy mindset. For example, he claims that the "government is implying mind control and brainwash on the people by controlling grammar" (http://tinyurl.com/5uvzflo at 3:35). His videos are filled with absurd and pointless syllogisms, such as

1. If B.C.E. years are unable to start then A.D.E. years are unable to begin.
2. B.C.E. years are unable to start.
3. Thus, A.D.E. years are unable to begin.

More ominous is his short video about mind control (http://tinyurl.com/65du8xz): "I'm able to control every belief and religion by being the mind controller."

But it now appears that Loughner had been posting to at least one Internet conspiracy site using the name "Erad3"

"It is error only, and not truth, that shrinks from inquiry."
– Thomas Paine

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(which would be an anagram of his first name if we substitute a *J* for the *3*). Erad3 posts some of the very same inane content that we find in the above YouTube videos, such as "infinite currency." The pseudo-syllogistic style of both writers is clearly the same. It's virtually certain that Erad3 is, in fact, Loughner (see http://tinyurl.com/4qcrxvc).

On the website Above Top Secret, dedicated to UFOs and other conspiracy-related subjects, Erad3 began a long thread titled, "All aboard with the empty NASA Space Shuttles!" (http://tinyurl.com/Erad3). In it he argues not that astronauts never went to the Moon but that they never even went into space at all, using ridiculous syllogisms such as

1. If the design of the NASA Space Shuttle keeps the black body temperature of –454 F from the outside orbit, then the NASA Space Shuttle is at a temperature for human life.
2. The NASA Space Shuttle isn't at a temperature for human life.
3. Hence, the design of the NASA Space Shuttle doesn't keep the black body temperature of –454 F from the outside orbit.

To their credit, the other conspiracy aficionados on that site argued with Erad3 fiercely. His conspiracy syllogisms obviously made no sense. His theories were not even good conspiracy stories, just the delusions of some madman.

Erad3 also started a thread claiming that the Mars Rovers were likewise faked (http://tinyurl.com/2wt4ksc):

1. If NASA creates a Mars rover that communicates from Mars then the signal reaches from the distance of mars.
2. The signal doesn't reach from the distance of Mars.
3. Nonetheless, NASA creates a mars rover that doesn't communicate from Mars.

Space journalist and CSI Fellow James E. Oberg brings up the possibility that this shooting may have been due to more than just blind anti-government anger. Congresswoman Gabrielle Giffords, who Loughner is indicted for shooting, is married to NASA astronaut Mark Kelly. Oberg writes, "This raises the disturbing possibility that Giffords' husband, astronaut Mark Kelly, may not have been a coincidental feature of Loughner's delusions and murderous hatred. If he really had the belief that NASA was faking its space missions, then Kelly would have been one agent of that fakery—and perhaps in his weird world, so would his wife."

That undoubtedly was not the only reason for Loughner's mad anger at Giffords, but it likely contributed to it. Proximity—simple geography—could well have been the main factor. It's easier to be upset with people who are nearby, that one can see in person, than those far away that one never sees. And for someone with obsessive beliefs about government mind control, unconstitutional government acts, and NASA space conspiracies, the "power couple" of Congresswoman Gabrielle Giffords, who represents Loughner's district, and astronaut Mark Kelly, a supposed participant in a huge NASA conspiracy, would represent everything that he opposed.

Robert Sheaffer's "Psychic Vibrations" column has appeared in the SKEPTICAL INQUIRER for the past thirty years. He is also author of *UFO Sightings: The Evidence* (Prometheus 1998). He blogs at www.badUFOs.com.

Journal Retracts Paper by Wegman Report Author

A statistics journal has retracted a 2008 paper by the lead author of the highly controversial global-warming-denying Wegman report.

The problems with the published paper include apparent plagiarism, a complaint similar to those about the notorious 2006 Wegman report, which was sponsored by congressional critics of global warming led by Representative Joe Barton (Republican from Texas). The website Deep Climate, computer scientist John Mashey, and others documented abundant instances of near-verbatim material taken from climate textbooks and other published sources without credit. Mashey also found that the report was filled with much-debunked anti-climate-science claims (see "Strange Problems with the Wegman Report," SI, March/April 2011 and Mashey's detailed exposé at www.desmogblog.com).

Both the 2006 report and the 2008 study were by Edward Wegman of George Mason University. The 2008 study, coauthored by Wegman student Yasman Said, detailed part of the congressional report's analysis and was published in the journal *Computational Statistics and Data Analysis* (CSDA).

USA Today reporter Dan Vergano, who has long been investigating problems with the Wegman report, reported May 16, 2011, that the journal is retracting Wegman's 2008 paper. CSDA journal editor Stanley P. Azan says the journal publisher's legal team "has decided to retract the study" following the complaints of plagiarism. Plagiarism can result in serious sanctions.

Retracting a published paper is serious business. Done fairly rarely, it wipes the paper from the scientific literature and can taint the authors' reputations.

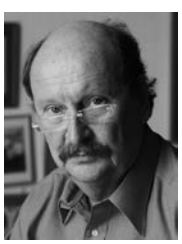
An attorney for Wegman and Said says his clients "stand by their work" despite the retraction. A spokesman for George Mason University, which has been investigating the problems with the 2006 report, said the 2008 study retraction was "a personnel matter" and declined comment.

In a May 16 blog following up on his article, *USA Today*'s Vergano published excerpts from e-mails obtained using the Freedom of Information Act showing that CSDA's editor, Azan, personally reviewed and accepted the paper five days after receiving it. If it was sent out for peer review, Azan couldn't find a record. Vergano also solicited a critique of the study from a noted network analysis expert, Kathleen Carley of Carnegie Mellon University. She said its description of data was "poor," and she would not have accepted it without major revisions. She said she "sees it as more of an opinion piece."

Conflicts of Interest in Alternative Medicine

EDZARD ERNST

When we think of conflicts of interest, we almost automatically think of money. In my area of research, complementary alternative medicine (CAM), there is no money—well, almost none (contrasted with most areas of mainstream medicine). Despite this fact, conflicts of interest are rife in CAM research. I am, of course, talking about a different type of conflict: the one that is created by strong belief and evangelic conviction.



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Across the globe, I personally know many individuals who are full-time CAM researchers. They have different personalities, backgrounds, and skills. But they all have, as far as I can see, one characteristic in common: they are strong believers in the benefit of at least some aspects of CAM. On the one hand, this may seem entirely reasonable: if one didn't believe in CAM, why would one dedicate one's career to investigating it?

On the other hand, if the vast majority of CAM researchers are made up of CAM believers, things might not be quite right either. In other areas of medical research, the situation is—in my experience—very different. I know many pharmacologists, for instance, who are keenly aware of the dangers of medicines and extremely critical of some of the activities of the pharmaceutical industry. I cannot say that I know many CAM researchers who are truly concerned about the dangers of CAM or of the activities of those individuals or organisations that promote CAM uncritically.

Conflicts of interest are precarious because they tend to cloud judgment and generate bias—the type of bias that creeps in unnoticed and cannot be readily identified when studying a published paper. After some detective work, we might be able to find out, for example, that a certain paper that draws positive conclusions about the homeopathic remedy Traumeel® (Schneider et al. 2008) was coauthored by at least one "expert" who is on the payroll of the manufacturer of that very remedy—even if the paper itself fails to disclose this fact (Schneider et al. 2008). But what about more subtle yet potentially powerful conflicts of interest? I fear that they have far too much impact on CAM.

If the totality of researchers in one field is open to unidirectional bias, one has to worry about the area as a whole. The danger, then, is obvious: the field will collectively lose its balance and make serious and repetitive mistakes without even noticing them. In the ab-

sence of criticism "from the inside," such an area of research can neither prosper nor mature. In my experience, CAM has very little internal criticism, as the following examples suggest.

Chiropractic

After the British Chiropractic Association (BCA) sued science writer Simon Singh for libel, the United Kingdom's General Chiropractic Council (GCC, the regulatory body of its members) was inundated with about 700 complaints from skeptical bloggers about chiropractors who had made similarly bogus therapeutic claims. The GCC reacted by commissioning North American chiropractors to write an "evidence report." Presumably, the GCC hoped that the report could clarify the evidence regarding the disputed claims. Bronfort et al.'s (2010) published report revealed no strong evidence for "manual therapies." Despite this seemingly critical stance, the report is still not critical enough, in my opinion. The reason becomes clear upon a reading of its fine print. Even though the authors repeatedly mention the "quality of the evidence," they fail to formally evaluate it. Thus, poor-quality primary studies are taken at face value, which inevitably leads to false-positive conclusions. Without the very obvious conflict of interest (chiropractors commissioned by the GCC), the report might have been far more critical than it turned out to be.

A similar situation occurs with systematic reviews of chiropractic as a treatment for specific conditions. Such articles are now emerging regularly, and they tend to display interesting discrepancies. For example, a review on the subject of asthma written by four chiropractors concluded that "chiropractic care showed improvement in subjective measures . . ." (Kaminskyj et al. 2010). Meanwhile, my own review, which included a critical assessment of the quality of the primary data, stated that "spinal manipulation is not an effective treatment for asthma" (Ernst 2009). Here I should mention perhaps that I, as an independent academic, have no conflicts of interest and receive no payments from Big Pharma or similar institutions that might have an axe to grind.

Years ago, I had already noted that reviews published by chiropractors tend to arrive at positive conclusions while those by independent experts do not (Ernst and Canter 2006). The explanation for this phenomenon seems to be simple: conflict of interest.

Acupuncture

Vickers et al. (1998) and others (Tang, Zhan, and Ernst 1999) have shown that 100 percent of all acupuncture trials originating in China report positive results. Recently, an in-depth analysis of acupuncture articles published between 1991 and 2009 revealed that China is now producing more acupuncture research papers than any other country (Han and Ho 2011). To make matters worse, this analysis also names the journals that publish the bulk of these articles: unsurprisingly, they tend to be the ones I have previously identified as publishing virtually no negative results (Ernst and Pittler 1997). Thus there is reason to fear that we are currently exposed to a mountain of research on acupuncture, much of which might be less than reliable.

Here the explanations might be more complex, and there could be more than one factor at play. Yet I have little doubt which one is the most important: conflict of interest.

What Can Be Done?

My message is clear: non-financial conflicts of interest can be just as powerful as financial ones, and in my area of research they seem to be quite overpowering. This problem will inevitably lead to significant distortions of the truth about the value of alternative medicine. The issue at hand is more than just academic: misleading results in health care endanger our health.

It is relatively easy to identify the problem, yet it is hard to solve it. I don't pretend to have the ideal solution. All I can suggest is that journal editors consider making their authors' conflicts of interest transparent and that readers of such papers apply a healthy dose of skepticism. Whenever there are two discrepant opinions (and that is the case more often than not), my advice is to determine which one might be prompted by a conflict of interest. In theory, this sounds fine; in practice, I am afraid, it will not be nearly enough to remedy the problem.

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Medium Allison DuBois Is Tested –and Fails–in the Real World

Allison DuBois, the best-selling author who inspired the recently cancelled television show *Medium*, claims to have amazing psychic abilities. But when her skills are tested in the real world—first with a missing-child case and then at a dinner party on reality-TV—they prove less than stellar.

RYAN SHAFFER

Psychic Allison DuBois has built an industry around her claims of helping law enforcement. A primetime network television show was based on her. She has three best-selling books and an army of devoted fans. But despite DuBois's celebrity power, the evidence for her supposedly accurate predictions is less robust than her profits. She has made several claims that are hard to accept—even for those who believe in psychic abilities. Even still, DuBois has walked a careful line in order not to reveal too much information. That strategy, until recently, has worked for her. In 2010, DuBois was asked by KPHO-TV, a Phoenix, Arizona, CBS affiliate, about a missing baby. The case marks the first publicly reported event in which DuBois has been specific in her predictions and offered a timeline for a criminal case. As it turns out, DuBois's predictions not only failed to solve the crime but were completely wrong.

Ryan Shaffer is a PhD candidate in the Department of History, State University of New York at Stony Brook. His articles have appeared in several magazines, including *Free Inquiry*, *Skeptic*, and the *Humanist*. He cowrote the article "Psychic Defective: Sylvia Browne's Record of Failure" in the March/April 2010 issue of SI.

DuBois was raised in Arizona and still lives in Phoenix with her husband. In 2005 she told Dan Abrams of MSNBC that she has "read over 1,200 people"; in 2006 she claimed to have performed 2,000 readings (with a waiting list of 3,000) (Pierlioni 2006). She has long claimed to use psychic powers to help law enforcement, including the Texas Rangers, and has said that she is "used for jury selection in rape/homicide cases, in order to obtain the sentence the prosecution wants" (DuBois 2005). Yet these claims have never been verified, and the Texas Rangers deny any involvement with her (Radford 2005). *Medium*, the network television show based on DuBois, has highlighted the character Allison DuBois "using her psychic smarts to help the DA in his efforts to find twelve people happy to send Mr. Psycho to the chair" (Bell 2005). The real-life DuBois claimed to be working on 150 cases in 2005 and says she's "never worked a case and not provided them with specific information" (MSNBC 2005).

When a crime story grips the nation, DuBois will typically discuss the event in an interview or claim involvement. In her 2005 book *Don't Kiss Them Goodbye,* DuBois wrote that she correctly described the man involved in the Elizabeth Smart kidnapping. Dubois wrote that her "friend Catherine" (no last name given) asked for a profile of the kidnapper, which DuBois gave, offering vague details that matched the kidnapper—that he was "a groundskeeper/handyman. He was a transient, but he managed to function in society." DuBois notes, "These

details could have helped much sooner if they had been used." In the middle of this narrative, she writes, "All the information I provided is on record and verifiable." The problem is that her claims are not verifiable because she supplies no names beyond her friend's first name. There is no mention of who she talked to or what law enforcement agency or volunteer group had the information. The only public details of DuBois making a prediction about Smart in 2002 came from her 2005 book. In addition, DuBois's own passage points out that her reading was not used in the high-profile Smart case. Smart's family had suspected Brian Mitchell was involved with the kidnapping. Mitchell was captured in the company of his wife and Smart on a Salt Lake City street after his image was broadcast on *America's Most Wanted* in 2003.

Similarly, during Natalee Holloway's disappearance a few years later, DuBois appeared on MSNBC's *Rita Cosby Live* to claim, "You have the right suspects. I mean, they're completely guilty." DuBois's information was incorrect. The case remains unsolved and those suspects were not charged. More recently, a story about a missing baby garnered national headlines, and DuBois made a prediction that finally put her claims to the test.

In December 2009, Elizabeth Johnson took her eight-month-old son, Gabriel, from his father in a custody dispute. For the next five days, Elizabeth spent nights in two different hotels with the baby. In the process, she texted messages to the father, Logan McQueary, saying that she killed the baby and threw his body in a trash can after wrapping him in a diaper. She was arrested on December 30 but refused to help police locate the baby. As national interest in the case grew, police interrogations and interviews with friends and family members were reported in the news. On March 3, 2010, Allison DuBois spoke to CBS 5 (KPHO-TV) about Gabriel Johnson. This is one exchange that was televised:

> **Interviewer** (voice-over): It's something we all feel and why Allison feels investigators will find this baby boy, but not, she says, in a San Antonio landfill.
> **DuBois**: I feel like he'll be found. It does feel like helicopters are overhead. It's a place they're already looking.
> **Interviewer** (to DuBois): Do you feel like we will find him soon or later?
> **DuBois**: Sooner than later. I feel like he'll be found within the year, within 2010. The people working this will make sure he's found.

Much of what DuBois states early in the interview—which took place more than two months after the events in question—had already been reported in the press. The reporter said that she planned to share DuBois's reading from the ninety-minute interview with Gabriel's father. However, what the station aired was general information: details already reported about the mother's text messages to the father, the ongoing custody dispute, and the actions of the mother. DuBois revealed the mother's motive during the KPHO-TV interview, saying, "I think she did it because she wanted to hurt the father *like she said*" (emphasis added). As KPHO-TV reported, "What she can't read from Gabriel, Allison said she can read from this video of Elizabeth in court and the sound of her voice on tape . . . and she also looked to the text messages Elizabeth sent Gabriel's father Logan McQueary just after the boy was last seen." The *Phoenix New Times* pointed out, "In the final analysis, after devoting nearly four minutes of airtime and a ninety-minute interview to the claims of a psychic, CBS 5 has told us nothing we didn't know a week ago" (King 2010).

However, DuBois's prediction that Gabriel would be found "within" 2010 was something that no one could have evaluated at the time. It is important to note that DuBois made no statement about whether Gabriel would be found alive or dead or where the baby boy might be. If DuBois is psychic, one would expect her to correctly predict

KH1 WENN Photos/Newscom.

Allison DuBois

the fate and location of the baby, but she didn't. It is reasonable to think that a baby who is missing will be found—based on police interviews, a plea bargain with the mother, or finding the child's body—as has happened in other high-profile missing-child cases. In any case, DuBois was wrong. Gabriel was not found in 2010. In January 2011, as police continued to look for him, the Tempe, Arizona, Police Department released documents detailing its search, including unconfirmable claims from an unnamed psychic about the baby. The mother had been charged with kidnapping, child abuse, and custodial interference, with a trial scheduled for later in 2011. Her son is still missing. DuBois has emphasized that her statements are based on psychic "feelings" and "impressions." In particular, DuBois explained how she feels about the case is based, in part, on looking at "a picture of Gabriel, first thing I do is look in his eyes that's my window in to him."

DuBois had a rough start to the new year. First, CBS cancelled *Medium*, and its last show aired in January 2011. Then DuBois received criticism about her December appearance on *The Real Housewives of Beverly Hills*, a reality television show aired on the cable channel Bravo, in which she visited her friend Camille Grammer, now ex-wife of famed *Cheers*

actor Kelsey Grammer (Phillips 2011). Sipping on a drink and smoking what appeared to be a cigarette, DuBois traded insults with other members of the show. One of the insults was aimed at Kyle Richards, who DuBois said "was every girl in a high school that made somebody kill herself." While holding her cigarette, DuBois said, "I'm gonna shove this up her [censored] ass just to prove a point. Except I think she'd need a bigger one just to feel it. Oh yeah, I went there." In response to questions about her behavior, DuBois blamed the show's editing and denied being intoxicated. In early January 2011, DuBois told *The Examiner* she smoked an electronic cigarette, not a real cigarette, and added, "I had two to three cocktails in four hours and was most definitely not intoxicated. If it offended any fans I apologize."

Then in February, Bravo aired the now infamous dinner party in a much longer format and made clips of the show, including "Allison's Full Rant," available online. The longer video was more revealing but probably not in the way DuBois wanted. During one part of the "full rant," DuBois angrily told the women at the table about Richards, "I don't give a [censored] what she thinks about me. She can [censored] off. I can tell you when she's going to die and what's going to happen to her family. I love that about me."

In another clip, appropriately titled "Lisa Takes on the Psychic," Lisa Vanderpump asked DuBois about Vanderpump's deceased grandmother. As DuBois started giving Vanderpump a reading, the video cut to Taylor Armstrong, who pointed out that what DuBois was saying "didn't make any sense." The show then cut back to Vanderpump saying to DuBois, "you don't know if she's with me." In response DuBois told Vanderpump, "You're thinking, I'm feeling; that's how we are different." DuBois then followed with "She was the mother that raised you or that was the mother you needed and so do you." The segment cut to Vanderpump telling the camera, "As soon as she said my grandmother raised me I lost interest because she didn't." Vanderpump disputed other claims DuBois made by bluntly saying "no" to her assertions, causing DuBois to look down and nervously laugh at one point. In reflection, Adrienne Maloof said the "reading sounds like a canned statement." Clearly, a reading with DuBois convinced neither Vanderpump nor Maloof that DuBois is psychic.

Viewing Allison DuBois as a case study in psychic ability, we can see that her paranormal claims are not backed by evidence. When an incorrect prediction is made, even considering its likelihood, the psychic fails.

Viewing Allison DuBois as a case study in psychic ability, we can see that her paranormal claims are not backed by evidence. When an incorrect prediction is made, even considering its likelihood, the psychic fails. Not only have her claims about working with law enforcement been denied, but third-party evidence supporting the assertion that she has psychic powers is lacking. This scenario should be construed as a lesson to the public: claims should be supported with evidence if they are to be accepted. In response to questions about skeptics, DuBois told the *Sacramento Bee*: "I'm very proud of what I do." Perhaps DuBois is proud of what she does, but that doesn't change the lack of proof for her claims and her incorrect prediction in baby Gabriel's case. The evidence, not pride, speaks for itself. Although the character of Allison DuBois on CBS's *Medium* solves crimes by using psychic ability, evidence for DuBois's ability in the real world is sorely lacking. CBS cancelled *Medium*, but there is little doubt that the real-life Allison DuBois will continue to claim that she helps law enforcement even if she can't supply evidence for her claims.

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The Séances of 'Hellish Nell': Solving the Unexplained

As the Allied Forces prepared for D-day toward the climax of World War II, Britain's highest criminal court was trying celebrity spiritualist Helen Duncan as a mediumistic fraud under the 1735 Witchcraft Act. Some thought she really was channeling spirits from the Beyond. But was the trial even about her questioned powers, or was it an attempt to silence her visionary revelations of top-secret naval events?

The case is treated in depth elsewhere (e.g., Shandler 2006), yet these treatments maintain an essential mystery of the affair: the precise nature of Duncan's séance materializations are left unexplained. Do clues remain that may help solve this very cold case?

'Hellish Nell'

Today it is easy to see Helen "Nell" Duncan (1897–1956) as a successor to both the biblical Witch of Endor (1 Samuel 28: 7–20) and a pair of nineteenth-century schoolgirls, Maggie and Katie Fox, who launched modern spiritualism in 1848. However, forty years later the sisters confessed that their otherworldly communications had no more substance than the alleged spirits themselves (Nickell 2001, 194). In the 1940s, spiritualists still produced "materializations" (appearances of spirits in the near-dark of séances), although these were repeatedly exposed as fraudulent.

Born Victoria Helen MacFarlane, the controversial medium had been a schoolgirl with "psychic" tendencies, earning her the sobriquet "Hellish Nell." She progressed from adolescent mill worker to unwed mother to wife of Henry Duncan, who would father seven more children with her while allowing her to support their family with her séances.

Today, Helen Duncan would be recognized as having a fantasy-prone personality (given her imaginary ghost friends, claimed magical powers such as clairvoyance, "trance" communications with higher entities, and so on [see Wilson and Barber 1983]). However, being fantasy-prone does not preclude also being fraudulent if one wishes to convince others that he or she really does have special powers—which brings us to ectopolasm.

Materializations

Ectoplasm is an imagined substance supposedly emanating from a medium in a trance state. Repeated exposés have revealed that ectoplasm is typically simulated with chiffon or cheesecloth. Easily compressible, these light fabrics are ideal for hiding and could—by inviting imagination in the near-dark—simulate the spirit of a baby in a dress or, unfolded further, a person in a transparent shroud.

Originally, spirit conjurers, such as the Davenport Brothers, would be tied up in a special "spirit cabinet" in which were placed musical instruments. After "spirits" were glimpsed outside the cabinet and music was heard playing, theater lights would eventually come on, and the brothers would be found still securely tied, "proving" no trickery was involved (Nickell 2001, 18–27).

Helen Duncan's cabinet consisted of a pair of black velvet curtains that hung from the ceiling and framed an armchair. The scene was dimly lit with a red light that produced an "unearthly glow" (Keene 1997, 101). The medium was first strip-searched by women in an anteroom, then confined in a large cloth sack that was closed at the neck with a drawstring, and finally bound to the chair with the knots sealed with wax.

Soon, Duncan was in an apparent trance, seemingly evidenced by her loud snoring. In time, "ectoplasm" might be seen creeping from the cabinet. Then Duncan's "spirit guide," one "Albert Stewart," would take over, engaging in banter with the sitters. An ectoplasmic blob might appear and be regarded as a baby's head; a shrouded figure, then another, might appear. At times, a sitter would be permitted to touch the ectoplasm. It would often be described as feeling like soft cloth. One witness complained that the spirits were "fat and clammy, undoubtedly human," perhaps like Duncan draped in muslin.

At the end of the séance, Duncan might wander out from behind the curtain, "Albert" having been kind enough to free her from the tied sack. Yet the sack would be undamaged and the knots intact and still sealed. It was as if Duncan had been dematerialized to pass through the sack (Shandler 2006, 91–92).

Secrets

Duncan was arrested on the evening of January 19, 1944. Well into the séance, bright lights came on. Although spiritualists claimed light could be fatal to a medium in the entranced state, Duncan

was only dazed. She, her assistant, and the couple who ran the spiritualist church in Portsmouth were charged under the Witchcraft Act, which stated: "If any person shall pretend to exercise or use any kind of witchcraft, sorcery, enchantment, or configuration, or undertake to tell fortunes, every person so offending shall suffer imprisonment by the space of one whole year without bail" (qtd. in Shandler 2006, 102).

The charges against Duncan really resulted from belated assertions that she was giving away wartime secrets: twice, it was said, she revealed the sinking of a warship—on May 24, 1941, the great battleship the *Hood* and again on November 25 of that year, HMS *Barham*. (A rumor claimed she materialized the spirit of a sailor whose cap bore the latter ship's name [Shandler 2006, 40].) Some officials were concerned by these violations of Prime Minister Winston Churchill's order to keep all naval losses secret. Were Duncan's revelations merely the lucky result of after-the-fact matching of pronouncements and events? Or was she a true medium? Or perhaps a spy? (Surely, if the last were true, she was an especially foolhardy one!)

Whatever the case, officials seemed to be unwilling to take chances with D-day approaching. Duncan was jailed, tried, and convicted; she lost her appeal and served out her sentence at Holloway Prison. She failed to foresee a rocket strike on the prison in the summer of 1944, but she did escape injury (Shandler 2006, 206, 270).

Duncan's trial provoked a curt note from Churchill (1944) to the Home Secretary, wishing to know "why the Witchcraft Act of 1735 was used in a modern Court of Justice" and officials "kept busy with all this obsolete tomfoolery." It has been claimed that Duncan's was the last witchcraft trial in Britain, but there was one more conviction under the act before Parliament replaced it in 1951 with modern legislation in the form of the Fraudulent Mediums Act (Shandler 2006, 217).

Duncan's trial provoked a curt note from Churchill (1944) to the Home Secretary, wishing to know "why the Witchcraft Act of 1735 was used in a modern Court of Justice."

More Secrets

Not everything was made clear by Helen Duncan's trial. True, there was evidence enough of her trickery, including the results of a disastrous séance in 1933. Duncan was observed creating a "Little Miss Peggy" who peeped from a nearby sideboard and lisped a nursery rhyme. Duncan created the fake spirit child and could be observed kneeling behind a cupboard, manipulating what proved to be "a woman's stockinet undervest" as if it were a sock puppet. As Shandler (2006, 172) describes it, "A dutiful sitter aimed a beam from a handheld lamp at Duncan. Flooded with light, the medium doubled over, [and] stuffed Peggy up her skirts, presumably the shortest route back to the Other Side."

Still, at the séance that led to Duncan's arrest in 1944, no trace of white cloth had been discovered. Unfortunately, while the séance room was thoroughly combed, the detective in charge chose not to have the attendees searched—Duncan, her husband, her attendant, the couple who ran the affair, and the sitters. Other detectives tried to catch Duncan *flagrante delicto* by capturing her ectoplasmic cloth. Psychical investigator Harry Price had a doctor probe her orifices, but when he planned to take X-rays, the medium ran away. Price wrote a book (1931) suggesting that Duncan swallowed and regurgitated the cloth. Later, however, watching a famous regurgitator, Kanichchka, the Human Ostrich, who gagged loudly and brought up only small materials, Price may have harbored doubts about the hypothesis (Shandler 2006, 165–66).

And what about Duncan's escape from the bag she was confined in or, on occasion, from a specially designed séance suit? Recall that "Albert" freed her from the tied sack whose knots were still sealed. Once in the early 1930s psychical investigators placed her into a special suit that was stitched up the back; at the close of the séance, "Albert" pulled it off and flung it into the group of spectators, who found it intact while the medium shivered naked behind the curtains (Shandler 2006, 67–69).

Revelations

Materializations are largely a thing of the past, although in recent times I have sat in dark-room séances including a "direct voice" scenario in which various voices—all sounding like versions of the medium's—speak through a supposedly levitating tin trumpet (Nickell 2004a, 42–43). As a magician and mentalist, I have studied séance magic for years, performing some feats myself and experimenting with many others (Nickell 2001, 267–75). Once, undercover, I was able to gain access to an out-of-the-way historic séance room at the spiritualist camp at Cassadaga, Florida, where séances like Duncan's had been held under the familiar red light (Nickell 2004b).

I have researched the cold case of Helen Duncan's materializations and

have turned up some clues. Since Duncan was actually caught and convicted of cheating, my hypothesis is that she was always cheating and that, like both honest and dishonest tricksters, she employed a variety of techniques. My friend William V. Rauscher (2006, 537), an Episcopal priest and magician who has exposed many spiritualistic deceptions, says that among materialization cabinet mediums Helen Duncan "stands out in the history of psychical research as ultra devious, and even disgusting."

It cannot be doubted that Duncan's ectoplasm (or teleplasm when used to effect mind-over-matter feats) was cheesecloth. As pointed out by V.J. Wooley, in the *Journal of the Society for Psychical Research* (1932), Harry Price's permitted flash photographs reveal that "the same holes and crease-marks [in the cloth] appeared in the pictures evening after evening." A materialized hand was obviously "a housemaid's rubber glove." Moreover, "the only non-photographic material secured was a portion of alleged teleplasm removed from the medium's mouth [where she was obviously disposing of the evidence] at the last sitting. This proved on analysis to consist of several layers of cheap paper stuck together with white of egg." Price (1933, 205) discovered from one photo that the spirit "Peggy" was "merely a picture of a girl's head cut from a magazine cover and stuck on the cheese-cloth."

If the fake medium did not introduce the cheesecloth by regurgitation—and Wooley (1932) reminded readers that "Mrs. Duncan was never seen to swallow or regurgitate anything, nor was any foreign substance found in her pharynx"—then she hid it somewhere, not necessarily inside her body.

A very important clue, I believe, comes from the work she did to support her family before becoming a professional medium: she was a seamstress. Duncan went door-to-door by day—taking in sheets to be repaired, socks to be darned, collars and cuffs to be reversed—then worked into the night completing the tasks (Shandler 2006, 143). She could well have put her considerable sewing skills to clever use in perpetrating her spook-show deceptions.

Consider, for instance, a séance Price attended. He reports, "The medium wore her own garments (a pair of black sateen knickers, a man's coat made of the same material, and a pair of black stockings)." Although Price says casually, "We examined them carefully," he does not convince us the examiners turned the coat inside out, unstitched the lining, and looked for cheesecloth—although during the séance she was covered head to foot with seeming "yards" of it (Price 1933, 203).

On other occasions, Duncan might have used the search of her person as a diversion, allowing a confederate (such as her assistant) to pass the cloth to her after she was searched. Confessed fraudulent medium M. Lamar Keene (1997, 100–104) notes that mediums often used this method, along with other techniques. A small kit of materials could even be hidden in the folds of the séance curtain beforehand or placed there by a confederate while the medium was being searched. (Houdini, who effected handcuff escapes from a curtained cabinet, hid his lockpicks and other tools in this manner [Gibson 1930, 26–27].)

As to the sewn-up séance suit and the cloth sack in which she was tied up, Duncan might again have used her sewing skills. She could have opened a seam (say, at the bottom of the sack) to free herself. The coils of rope wound about the sack would have presented little difficulty. As Houdini knew (and I learned as a boy imitating him), a single rope wound willy-nilly leaves lots of slack; so does tying it over a coat or sack (Gibson and Young 1953, 40). Subsequently, while as "Albert" she was delivering a soliloquy, the freed medium could have used the time to quickly restitch the opened seam. (Interestingly, Houdini described various sack escapes—including "The Spirit Sack"—as early as 1921.)

Duncan's feat would actually have been far more mysterious had she still been sealed in the bag, since it would have been nearly impossible for her to return to the tied position and re-sew the bag from inside. In brief, instead of being gratuitously released by "Albert" at the end of the séance, she probably accomplished her own escape at the beginning of the performance. She then simulated the appearance of spirits and finally tried to disguise what really happened by pretending she had been supernaturally released. Her case is a study in audacity. A current movement to have her posthumously pardoned (The Official Helen Duncan Web Site 2009) demonstrates her ability to continue fooling the gullible from the grave. ■

Acknowledgments

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Photos of Ghosts

The Burden of Believing the Unbelievable

Today when we see alleged ghost photographs or films we can easily shrug them away, knowing that with Photoshop or video-editing software it is a simple matter to create all kinds of fake marvels. However, more than a century ago when photography was still in its infancy, there was no knowledge of trick photography. Seeing photos of ghostly faces and figures floating around in the air must have been quite a shock to our ancestors.

The Origins of Spirit Photography

The practice of spirit photography was officially born in 1862 when William H. Mumler, a Boston photographer, discovered that in a picture he had taken of himself there also appeared the image of his dead cousin. Photographic techniques were still at a rudimentary stage: the first working photographic process, the daguerreotype, had been developed only twenty-two years earlier by Louis-Jacque-Mandé Daguerre. Therefore photography was a relatively young art when Mumler announced that he had been able to capture a ghost on film. The public rushed enthusiastically to his studio to get pictures of dead relatives.

The fundamental technique used by every spirit photographer simply involved taking a picture of the client. It was only in the developing process that one or more extras in the form of ghostly faces were added to the photograph. Usually, the clients would recognize in these images a dead relative or friend.

When it was discovered that some of Mumler's most famous pictures contained extras resembling people still quite alive, even believers became suspicious. One of Mumler's most touching photos, displayed by Sir Arthur Conan Doyle during his lectures, was later shown to be a fake. It showed a crowd of mourners at the London Cenotaph on Armistice Day; above the crowd was a fog of spirit faces—those of fallen heroes, it was supposed. However, it turned out that some of the spirits were faces of living football players, and one belonged to the living African boxer Battling Siki.

Mumler's trick was to use double exposures, a technique almost unheard of in those days, by which he had been able to superimpose faces from other pictures onto the pictures belonging to his clients. He was accused of fraud and taken to court; at the trial, however, he was acquitted. Mumler later died in poverty in 1884.

The Case of the Crewe Circle

At the turn of the century, one of the most famous spirit photographers was William Hope (1863–1933), a member of the Crewe Circle—a group of spiritualists from Crewe, England, whose members appeared to be able to register the faces of spirits on photographic plates simply by holding the plates in their hands. It was further claimed that the plates could be furnished by Hope's clients themselves. Even Conan Doyle obtained a picture made in this fashion resembling his dead sister.

However, in February 1922, psychic researcher Harry Price (1881–1948) of the Society for Psychical Research (SPR), along with a magician named Seymour, conducted an investigation into the methods of the Crewe Circle. Along with fellow SPR researcher Eric J. Dingwall and magician William S. Marriott, they devised a plan that consisted of presenting Hope with a set of glass negatives that had been secretly marked with X-rays. The trap worked: when Hope returned the plates, the one containing the "extra" spirit image showed no sign of the markings; this meant that Hope had switched a prepared plate for the secretly marked one. "In the above case," began the Price accusation that appeared in the *Journal of the Society for Psychical Research*, "it can, we think, hardly be denied that Mr William Hope has been found guilty of deliberately substituting his own plates for those of a sitter.... It implies that the medium brings to the sitting a duplicate slide and faked plates for fraudulent purposes."

Spiritualists denounced the report as part of a conspiracy against Hope, and Conan Doyle, who was then vice president of the Society for the Study of Supernormal Pictures, took up the defenses of the Crewe Circle. He begged Price to reconsider his position, hoping to settle the controversy "in some honorable fashion." Conan Doyle wrote, "It makes an open sore in the movement." Price, however, refused to recant his report, so Conan Doyle started working on a pamphlet on spirit photography detailing his side of the affair. He talked about the case to Houdini in a letter he wrote on April 13, 1922:

> I have written a book on Psychic Photography with special reference to the Crewe Circle. The evidence in their favor is overwhelming, tho' what happened on a special occasion with 2 amateur conjurers, out for a stunt, and a third (Dingwall) behind them is more than I can say. We find

> that another test was independably [*sic*] carried out about the same time, when the Kodak Co. marked a plate. The mark was found by them all right afterwards, and also an extra. Our opponents talk of one failure and omit the great series of successes. However, truth wins and there's lots of time.

Houdini was not impressed. He had tried to get an audience with Hope in December 1921 but was informed that the medium's engagements would keep him busy for months. Houdini then asked fellow British magician DeVega (Alexander Stewart, 1891–1971) if he would sit for a photograph with Hope. During the sitting, DeVega was sure that the slide he had loaded had been changed for another one and told Houdini. His skepticism toward Hope, then, seemed to be justified. Conan Doyle, however, was still convinced that Hope's spirit photos were genuine, as he reported to Houdini in his letter dated August 6:

> We seem to have knocked the bottom out of the Hope "exposure." The plates were marked by X-rays and we find by experiment that X-ray marks disappear on a 20-second exposure, which was the exact time given. Our time is continually wasted over nonsense of this sort, but I suppose it has to be done.

Belief Never Dies

Conan Doyle's letter worried Houdini because he had already started to talk publicly about the "unmasking" of the Crewe Circle. The magician then contacted Harry Price, who at the time was experimenting to see whether X-ray markings really disappear on exposure. At first the results seemed to confirm Conan Doyle's theory; however, further experimentation proved that X-rays do not disappear with prolonged exposure, thus proving that the plates had been switched. Meanwhile, Conan Doyle continued working on his pamphlet *The Case for Spirit Photography*, which he eventually privately published in the early twenties.

However, having lost one possible explanation for the disappearing marking, the spiritualists had to account for it in another way. One possible solution was that the investigators did not actually give Hope the marked plate in an attempt to frame him, and this is what Conan Doyle suggests to Houdini in his letter of October 29:

> The Hope case is more intricate than any Holmes case I ever invented. I am sure now that there was trickery on the part of the investigators and that the marked plates were not in the packet when taken to the dark room. One of them was returned by post anonymously *undeveloped* to the S.P.R. Now, since Hope and the College people knew nothing of the test, until four months later, how could they return an undeveloped plate, for how could they pick it out as a marked one, since the marking only shows on development? Clearly it was done by one of the Conspirators, and he could not have picked it out of all the other plates in the dark room, even if he had access to it. It is clear to me therefore that it never went to the dark room at all, but was taken out before. My pamphlet is ready but I hold it back in the hope of learning who the rascal was.

After receiving this letter, but without revealing his source, Houdini wrote to Harry Price on November 18 asking whether these allegations were true: "There is a rumor afloat here that the Crewe circle were 'framed.' There is talk about an undeveloped negative being sent back anonymously. Have they any reason at all to claim that they were 'framed'?"

Actually, the return of the undeveloped plate could also be explained by Price's hypothesis of fraud: if Hope had switched the marked plate for a previously exposed one, he would still possess the plate that Price had originally brought. The controversy between Conan Doyle and Price would resurface again during the following months, and Houdini would find himself right in the middle of the two opposing parties.

Price, for example, reprinted the results of his experiments with the Crewe Circle in the booklet *Cold Light on*

William H Mumler from Wikimedia Commons

Famous photo of Mary Todd Lincoln with the "spirit" of her husband, President Abraham Lincoln.

"Mr. Marriott has clearly proved one point, which is that a trained conjurer can, under the close inspection of three pairs of critical eyes, put a false image upon a plate. We must unreservedly admit it."
—Arthur Conan Doyle

Spiritualistic Phenomena because, he explained in the booklet's preface, "the Journal of the Society for Psychical Research is printed only for circulation among its Members and Associates." The booklet caused quite a stir among spiritualists, and Conan Doyle entreated Price for years to take it out of circulation: "I do feel strongly that the popular sixpenny pamphlet designed to ruin a man who had 17 years of fine psychic work behind him is wrong . . . my belief is that you yourself did not write it. However so long as your name is on [it] we can only go for you." In his autobiography, *Confessions of a Ghost Hunter*, Price recalled, "Arthur Conan Doyle and his friends . . . abused me for years for exposing Hope."

As for the magician Marriott (see also my column "William S. Marriott's Gambols with the Ghosts," SI, March/April 2003), he was able to score a point with Conan Doyle. In 1921 a journalist named James Douglas had a photo of himself taken by William Hope that, when developed, showed the presence of a spirit extra. Douglas was so impressed by the phenomenon that he issued a public challenge to anyone who could duplicate the feat without using psychic powers. Marriott accepted the challenge and performed not only in front of Douglas but Conan Doyle as well. He produced a picture of Douglas and Conan Doyle with a young woman and a picture of Conan Doyle with little fairies dancing in front of him. He then explained in detail how he had manipulated the photos, and Conan Doyle felt compelled to write a public statement: "Mr. Marriott has clearly proved one point, which is that a trained conjurer can, under the close inspection of three pairs of critical eyes, put a false image upon a plate. We must unreservedly admit it."

This episode, however, did not convince the believers even though the saga came to an end in 1932 when Fred Barlow, a former friend and supporter of Hope's work and former secretary of the Society for the Study of Supernormal Pictures, gave a joint lecture along with Major W. Rampling-Rose to the SPR to present findings gleaned from an extensive series of tests on the methods Hope used to produce his spirit photos. The two, who presented their case in depth in Volume 41 of the *Proceedings of the Society for Psychical Research*, concluded that the "spirit extras" that appeared in Hope's photographs were produced fraudulently. It was only Hope's death at Salford hospital during the publication of the report that ultimately ended the debate. The believers would soon start to find extras of his face in the spirit photographs of others.

The case of William Hope and his Crewe Circle deserves to be remembered today because it shows that it is practically impossible (and futile) to try to convince someone who wants to believe even in the face of quite convincing contrary evidence. ■

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Popper vs. Kuhn: The Battle for Understanding How Science Works

Karl Popper and Thomas Kuhn are two of the towering figures of twentieth-century philosophy of science, and for good reason. Some of their ideas even made it into mainstream culture and are among the few concepts from philosophy of science that are somewhat known to practicing scientists. Popper, of course, gave us the idea of falsifiability as a way of distinguishing genuine scientific theories from pseudoscience. Kuhn introduced the concept of paradigm shift to indicate those rare situations in the history of science in which a field abandons a framework in favor of another, as a result of a crisis induced by a mounting number of puzzles that cannot be resolved within the context of the old framework.

I recently read an interesting article by Darrell P. Rowbottom, to be published in *Studies in History and Philosophy of Science* (available online for download at http://users.ox.ac.uk/~sfop0262/SHPS.pdf), about a notorious controversy between Popper and Kuhn. Rowbottom points out that the flashpoint of the controversy was the publication of *Criticism and the Growth of Knowledge: Proceedings of the International Colloquium in the Philosophy of Science*, in which the two heavyweights of philosophy of science went at each other with no punches pulled.

Essentially, Popper's position was that the main role of a good scientist is that of a critic of established or working hypotheses. As he put it: "It is the most characteristic feature of the scientific

Karl Popper (left) and Thomas Kuhn.

method that scientists will do everything they can in order to criticize and test the theory in question [i.e., any theory being considered]. Criticizing and testing go hand in hand: the theory is criticized from very many different standpoints in order to bring out those points which may be vulnerable." I have no idea which scientific laboratories—if any—Popper hung around, but this description surely doesn't resonate with the kind of science that I have seen in action during a quarter century of practice as a biologist.

Kuhn's view, on the other hand, was that criticism is exceptional (it's what leads to the occasional paradigm shift) and that much of science is what he called "puzzled solving," or "normal science." To wit: "Trial attempts [to solve puzzles], whether by the chess player or by the scientist, are trials only of themselves, not of the rules of the game." Furthermore: "Failure to achieve a solution discredits only the scientist and not the theory. . . . It is a poor carpenter who blames his tools." That's certainly more like the reality of scientific practice, at least according to my experience.

Of course, Kuhn's view cannot be the entire story, because certainly Popper-type criticism of hypotheses does take place in science, and we need an account of its role within the broader context of scientific progress. Kuhn may have been right that most of the time the rules don't get questioned, but if they were never questioned we would have no explanation for the occurrence of paradigm shifts to begin with, thus undermining Kuhn's own picture of how science works.

The idea that Rowbottom explores in his forthcoming paper is that Popper and Kuhn's disagreement amounted to a distinction between two functions within the practice of science, one of criticism (Popper) and one of puzzle solving (Kuhn). The debate hinged on which function was more important for an individual scientist to pursue, but both Popper and Kuhn missed the obvious solution: both functions are performed at the group level, i.e., by the ensemble of scientists working within a particular discipline. Some scientists are more inclined or apt to engage in criticism and others in puzzle solving. Science works well precisely because there is a division of labor that facilitates the continuous interaction between the two functions.

Some scientists are more inclined or apt to engage in criticism and others in puzzle solving. Science works well precisely because there is a division of labor that facilitates the continuous interaction between the two functions.

Even so, Rowbottom raises but does not address the obvious crucial follow-up questions: What is the ideal balance between Popperian and Kuhnian functions in science? And how does that differ from the actual mix between critical and puzzle-solving scientists that we find on the ground? Are the answers to these questions different for different sciences? And if so, why? My experience is that there is a far greater number of puzzle solvers than critical scientists around, which is probably a good idea as long as enough critical scientists are funded and their work is taken seriously for the vital part it plays in the broader enterprise. It would be interesting for funding agencies and journal editors to actually address this question empirically and to adjust their priorities accordingly. To my knowledge, this has never been attempted.

There is one more crucial function that Rowbottom mentions but leaves as an unexplored black box: creativity. Both critical scientists and puzzle solvers have to get their ideas from somewhere, somehow. Yet what philosophers of science often refer to as the "context of discovery" (how new ideas come about) is simply not amenable to the kind of logical analysis that philosophers are good at, which makes them concentrate on the "context of justification" (how ideas are tested once they have been thought out). It strikes me that the context of discovery is a question for sociologists and psychologists of science that remains largely unexplored.

"Psychic Vibrations" has appeared in the SKEPTICAL INQUIRER for the past thirty years. Sheaffer is also author of *UFO Sightings: The Evidence* (Prometheus 1998). His website is at www.debunker.com.

2012: Peter Gersten's 'Leap of Faith'

Lawyer Peter Gersten has been a well-known figure in UFOlogy at least since the 1970s. He filed suit against the CIA in U.S. District Court in 1977 for release of documents concerning UFOs. This resulted in over 900 pages of documents being released, although there was little in them that wasn't already known. There were fifty-seven pages that were held back due to national security concerns. UFOlogists made a big stink about this, claiming it was proof of a government cover-up. In actuality, the files were held back because they might allow other nations to gain information on U.S. capabilities in electronic and signals intelligence. For example, there was one instance in which the CIA listened in on a Cuban Air Force pilot discussing a UFO sighting. The problem wasn't the UFO sighting; it was that we didn't want the Cubans to know we'd been able to listen in on their pilots' conversations.

Now retired to Sedona, Arizona, a center of a supposed "New Age energy vortex," Gersten says that he plans to take a "leap of faith" from Bell Rock, a well-known vortexy place in Sedona, at the moment of the solstice: 11:11:11 UT (4:11 AM in Arizona) on December 21, 2012. He thinks that some "trans-dimensional event" will occur, sucking him into a cosmic portal, where he will probably meet the late members of the Heavens Gate cult (still wearing their sneakers) as well as Jimmy Hoffa and Judge Crater. Gersten writes:

> On the Winter Solstice of 2012 at exactly 11:11 UT a cosmic portal will open in Sedona Arizona and a leap of faith—from the top of Bell Rock—will propel me through its opening. . . . My two principal beliefs are: 1) that our reality is an intelligently designed cosmic holographic program and 2) that on the Winter Solstice of 2012 at exactly 11:11 UT —a *Trans-Dimensional Event* (T-DE) will occur. . . . An article on my web site discussing the Mayan calendar end-date states that: *There is no reason not to take a leap of faith imagining what may be in store* (10). So by now you must have an idea of what I plan to do on the *Winter Solstice of 2012 at exactly 11:11* while on the top of *Bell Rock*—a place only a few miles from my home. . . . Most of you will think that I am delusional and that my insane act will certainly result in my death. Death is inevitable—at least nowadays—and 100 years from now it won't matter whether I died in 2012 or 2013 or even 2020. But I believe that some type of *cosmic portal* will be opening at that time and place and that an opportunity will present itself. I fully expect that it will either lead to the next level of this cosmic program; freedom from an imprisoning time-loop; a magical *Martian-like* bubble; or something equally as exotic. In March 2012 I will reach 70 years of age and nine months later we arrive at the cosmic coordinate. I think it will then be time for me to move on—in one form or another. I'd like to see what else our Cosmic Computer has to offer.

(Gersten removed his original article from his website, but it has been permanently cached at www.webcitation.org/5wTAdInwA.) When I first read about this, I could not believe that it was true. Had somebody with a grudge against Gersten made this up? Yet in a YouTube video (www.youtube.com/watch?v=ndEzEgWZmpw), we see and hear Gersten explaining, in his own words, his plan to leap into the portal that he believes will be opening up. He explains that even if he dies in this leap, it is probably good karma to die at a time of such special cosmic energy.

What Gersten and so many others do not seem to realize is that from an astronomical standpoint, there is *noth-*

ing special going on in December of 2012. Nada. There will be a transit of Venus across the face of the Sun on the afternoon of June 5, 2012 (the morning of June 6 in Asia and Australia), which is a really special and rare celestial alignment (the next one won't occur until 2117). But clearly that is not what the hoopla is about. No alignments are going to happen around the 2012 winter solstice that do not also happen every December. Supposed Bible codes and ancient calendars simply don't cut it. No matter how many times nonsense is repeated, it still remains nonsense. I've briefly met Gersten a few times, and he is a pleasant fellow. I hope that he acquires at least a little bit of common sense on this subject in the next 643 days (as of March 18; the real-time countdown is on Gersten's website at www.pagenews.info/) and does not go through with his mad plan.

When I said on my original blog post on Gersten's leap (from which this column heretofore has been adapted; available online at http://badufos.blogspot.com/2011/02/2012-peter-gerstens-leap-of-faith.html) that there was no unusual alignment occurring at that time, Gersten posted a comment disagreeing and pointed me to some information about a supposed alignment of the Sun with the galactic equator at the moment of the solstice. The supposed "Grand Cosmic Alignment" of 2012 is illustrated in figure 1, which I made using *Skychart* (*Cartes du Ciel*, a free open source multi-platform program, which I highly recommend). It shows the Sun at the time of the December Solstice on December 21, 2012 at 11:11:11 UT. The ecliptic is the horizontal line, on which the Sun appears to be moving from right to left. The inclined line shows the plane of the Milky Way, the galactic equator. There is your alignment.

"But wait," you might say. "They're not really aligned."

True enough. The actual alignment, for what it's worth, occurred in 1998 when the center of the Sun aligned as closely as possible with the plane of the galaxy at the time of the solstice. In fact, since the Sun has an apparent diameter of a half-degree (as seen from Earth), alignments such as these began in 1980 and will continue until 2016. So there you have your grand alignment, which actually occurred in 1998 and was meaningless even then. Why this has any supposed connection with the 2012 solstice is anyone's guess. So if I were Peter Gersten, I'd wait for a much better alignment than this before leaping off a cliff.

When I pointed this out, Gersten disagreed again, pointing me to the really good stuff: Thomas Razetto's claims about the supposed alignment of the solstice point with the Great Rift of the Milky Way, also (allegedly) known as the Maya Birth Canal (www.infinitelymystical.com/essays/why-maya-picked-2012.html). This, says Razetto, constitutes the "Sacred Triple Rebirth of the Sun."

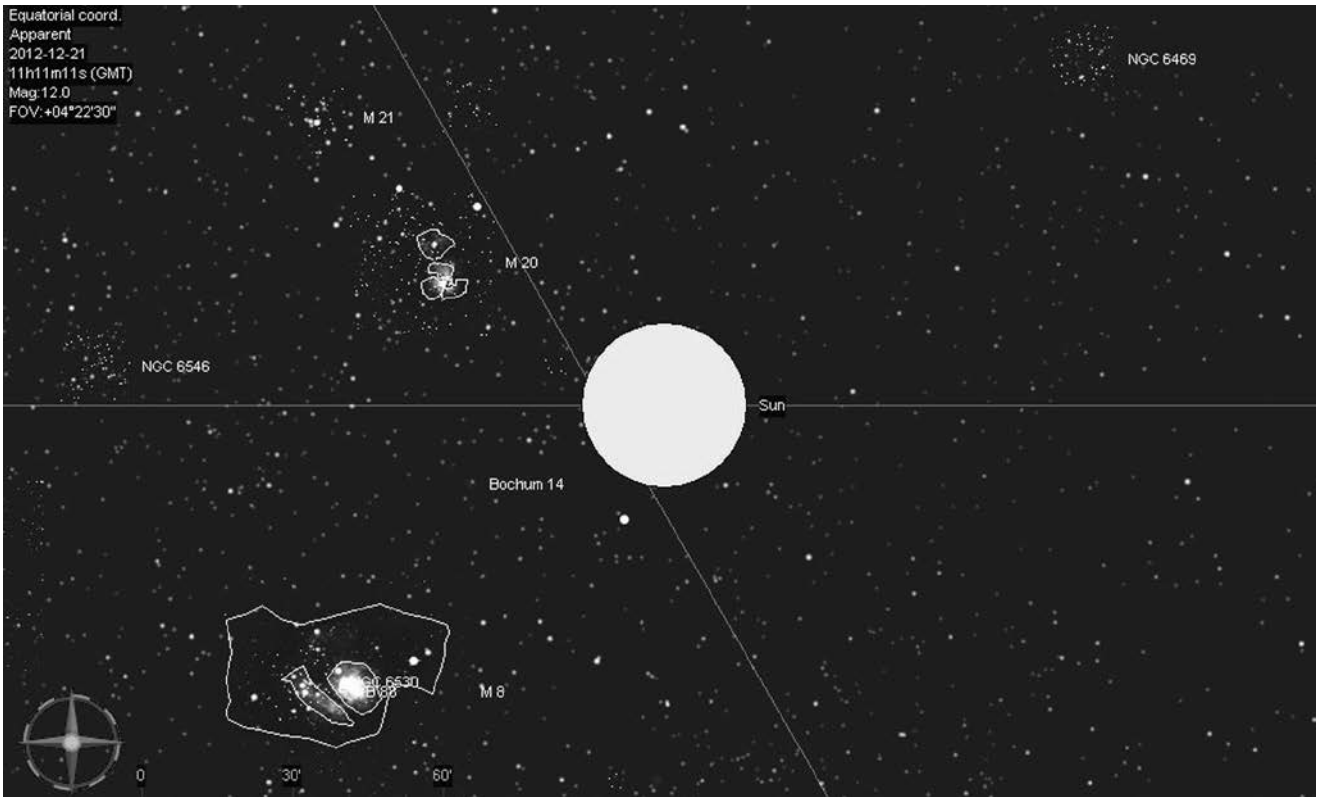

Figure 1. The Sun and the Galactic Equator at the "alignment time" in 2012: close, but no cigar. The actual alignment, for what it's worth, occurred in 1998 and was meaningless even then.

The "Great Rift," or "Dark Rift," of the Milky Way is simply a big old cloud of dust and gas along the Galactic plane that obscures the stars behind it. Many galaxies have this, not just ours. We have seen that the Sun will *not* be aligned with the galactic equator at the time of the 2012 winter solstice (although it would make no difference even if it were), but if you look around hard enough, you'll find *something* that the Sun will be aligned with. In this case, it's the Milky Way's Great Rift. Throw a few planets into the mix, and you can fashion up a "Sacred Tree" (figure 2; the Milky Way is the trunk of the tree and the four planets make the branches). Razetto apparently doesn't care that Pluto has now been (quite properly) downgraded to the rank of a minor planet. Maybe he should include Ceres, Vesta, Sedna, and Chiron in his alignment as well.

I think any rational person can see that this "Sacred Triple Rebirth" of the Sun and the "Sacred Tree" is nonsense, especially coming from a website calling itself "infinitely mystical." I could make up a similar cosmic-alignment story for practically any equinox or solstice, throw in a few planets, and invent some high-sounding reason why it signals the beginning of a cosmic new age. Most people don't realize that the inner planets Mercury and Venus spend a lot of time (from Earth's perspective) hanging out in the vicinity of the Sun, and Mars appears to move more slowly when it is directly on the opposite side of the Sun from us than at other times. Thus, yes, it also seems to loiter for a long time in the vicinity of the Sun. One must be ignorant of planetary orbits to find any significance whatsoever to having Mercury, Venus, and Mars in the vicinity of the Sun at some random time. But forget all these facts. This is astrology, plain and simple, and astrology is ancient superstition, nothing more. It doesn't matter where this planet or that planet is. It's all humbug. But since Gersten finds Razetto's claims convincing—so convincing that he is willing to risk almost certain death because of them—there is nothing more for the rational person to say. When faith clashes with reason, faith wins out nearly every time.

As for the oft-repeated claims about the Sun aligning with the center of the galaxy, well, it never even comes close. This is illustrated by the *X* in figure 2. The galaxy's center does not lie on the ecliptic, so the sun never reaches it. (Although each December solstice the Sun passes only about five degrees from it. Wow!)

So as you can see, there is absolutely nothing unusual or special occurring on or about December 21, 2012. It's just the same old "when the Moon is in the Seventh House, and Jupiter aligns with Mars." I suggest that anyone who has gotten even a little worried by all the doomsday talk about 2012 go over this information carefully. If you realize that you've gotten all worked up over a Sacred Tree superimposed over the Maya Birth Canal, you're going to feel rather silly about it. At least *I* would.

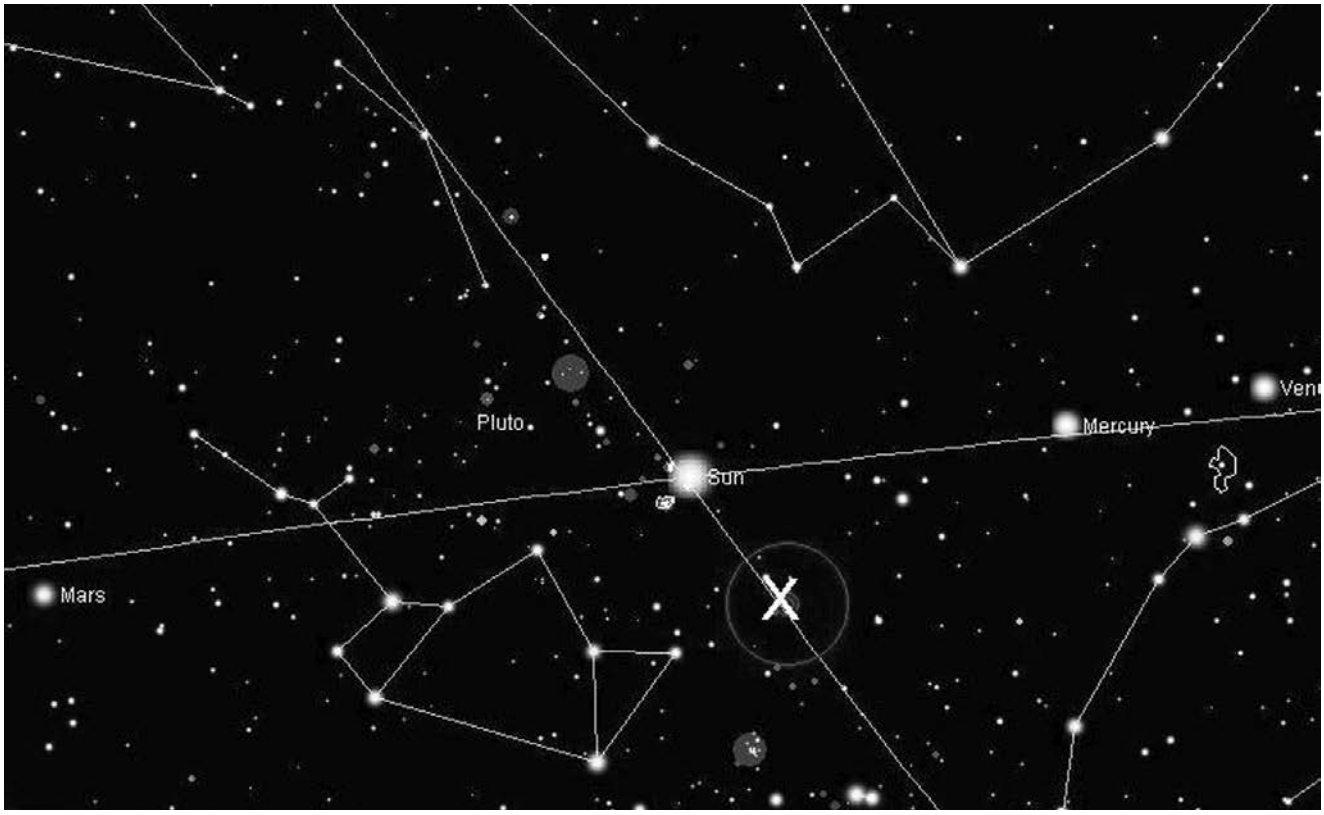

Figure 2. The Sacred Tree and the center of the galaxy (X) on December 21, 2012. This is more nonsense.

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What Is Acupuncture?

Scientific jargon can be impenetrable, but it's often necessary—ideas must be precisely and unambiguously defined in order to be useful. It's difficult to test a vague notion or subject an amorphous concept to examination. So we must first define what acupuncture actually is before we can ask whether acupuncture works. This is not as easy as it might seem.

Acupuncture is often referred to as an ancient Chinese practice, but in actuality it's neither very ancient nor exclusively Chinese. The modern practice of acupuncture is only decades—not centuries or millennia, as is often claimed—old (Ramey 2010). It has antecedents in ancient times, but the practice of needling in Asia was not much different from the practice of bloodletting in the West (Novella 2010).

The National Center for Complementary and Alternative Medicine (NCCAM) has this to say about the definition of acupuncture:

> The term "acupuncture" describes a family of procedures involving the stimulation of anatomical points on the body using a variety of techniques. The acupuncture technique that has been most often studied scientifically involves penetrating the skin with thin, solid, metallic needles that are manipulated by the hands or by electrical stimulation. (NCCAM 2011)

It appears the definition of acupuncture is not tied to any alleged mechanism of action. Some definitions mention Traditional Chinese Medicine (TCM) and either directly state or imply that acupuncture works by influencing the flow and balance of *chi*, or life energy. Such notions are little more than prescientific superstition, so modern proponents are often vague on mechanism or refer to highly speculative and unproven physiological mechanisms. Regardless of any potential mechanism, there are two features that seem to define acupuncture: the existence of specific acupuncture points at various locations on the body and the stimulation of these points by "a variety of techniques," most commonly inserting thin needles through the skin.

So-called electroacupuncture is very problematic in terms of scientific specificity, because electrical stimulation through the skin has known physiological effects independent of the existence of acupuncture points. Scientific experiments are designed to control for as many variables as possible; only by isolating variables can we say which variable is having which effect. Electroacupuncture mixes variables, making it impossible to separate out the ones specific to acupuncture from the effects of electrical stimulation itself.

Needle insertion also has nonspecific physiological effects independent of any notion of acupuncture, but these are likely minimal, transient, and local. So for the purpose of experimentation, it is reasonable to define acupuncture as the insertion of thin needles into acupuncture points.

Clinical studies into the effectiveness of acupuncture have evolved over recent years, and there have actually been quite a few well-designed studies that adequately isolate these two variables (acupuncture points and needle insertion). For example, many studies compare verum acupuncture (true acupuncture in which needles are inserted into the alleged proper acupuncture points for the condition being treated) to sham acupuncture (in which needles are inserted into the "wrong" locations). These studies overwhelmingly show that needle location does not matter—verum acupuncture is no more effective than sham acupuncture (Moffet 2009; Ernst 2009).

Some trials also control for the variable of needle insertion, using placebo or simulated acupuncture in which opaque sheaths are used and a dull needle is pressed against the skin when the plunger is depressed, but there is no skin penetration. Alternatively, toothpicks have been used to simulate the sensation of acupuncture without going through the skin. Again, when this variable is isolated, it turns out that simulated acupuncture works as well as verum acupuncture. This is true of the largest and best trials of acupuncture for the most common uses, such as reducing back pain (Haake et al. 2007) and treating nausea (Enblom et al. 2011).

Therefore, if we define acupuncture as using needle insertion to stimulate acupuncture points, and the best scientific evidence shows that acupuncture points do not exist (it doesn't matter where you stick the needles) and needle insertion has no effect (it doesn't matter whether or not you stick the needles), then does acupuncture work? I think the only reasonable answer is no; there is no reality to acupuncture or the concepts upon which it is based.

If anything can be said to have a measurable effect in acupuncture trials it is the therapeutic ritual that surrounds acupuncture (but not the acupuncture itself). Even these effects are modest and nonspecific—they result from a subjective sense of well-being gained from the kind attention and relaxation that attends the acupuncture ritual.

We have known for decades that a good bedside manner, with some relaxation and encouragement, makes people feel better. This may create the illusion that whatever specific intervention accompanies these nonspecific effects is itself having some effect. That is the very point of scientific experiments: to isolate these variables. And when that is properly done, it becomes increasingly clear that acupuncture (the sticking of needles into alleged acupuncture points) does not work.

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[SCIENCE WATCH KENNETH W. KRAUSE

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Women and High-End Science: Nurture or Nature, Prejudice or Preference?

In a letter to King Frederick II of Prussia, Voltaire wrote of his lover, French noblewoman Émilie du Chatelet, that he considered her "a great man whose only fault was being a woman." Du Chatelet was privately trained and, among eighteenth-century females, exceptionally well-versed in mathematics and physics. Her French translation of Newton's *Principia Mathematica* remains the definitive text.

Nonetheless, as Voltaire's ironic letter suggests, du Chatelet was less than delighted with the plight of intelligent, science-minded women. Writing around 1735, she confessed to "feel the full weight of prejudice which so universally excludes us from the sciences." Plainly, du Chatelet believed it was France's culture and education system and not the female brain that was responsible for the inequity.

In 2005, the blazing-hot topic of female underrepresentation in high-end science was addressed by American economist and then-president of Harvard University, Lawrence Summers. "In the special case of science and engineering," he famously suggested, "there are issues of intrinsic aptitude, and … those considerations are reinforced by what are in fact lesser factors involving socialization and continuing discrimination."

A notoriously impassioned debate ensued. Within a few months, Harvard's arts and sciences faculty passed a motion demonstrating a "lack of confidence" in their president's leadership. Conversely, when asked whether Summers's comments were intellectually appropriate, the prominent cognitive scientist Steven Pinker responded: "Good grief, shouldn't everything be within pale of legitimate academic discourse, as long as it is presented with some degree of rigor? That's the difference between a university and a madrassa. There is certainly enough evidence for the hypothesis to be taken seriously." Summers resigned the following year, but his provocative challenge—"I would like nothing better than to be proved wrong"—was not forgotten.

No one seriously disputes the statistical facet of female underrepresentation among the higher echelons of the science, technology, engineering, and math (STEM) fields. Recent data from the United States—collected by Cornell University researchers Stephen Ceci and Wendy Williams—leave little room for disagreement. In 2005, PhDs were awarded to women as follows: 30 percent in math, 21 percent in computer science, 14.3 percent in physics, and 8.4 percent in mechanical engineering. Tenure track university positions went to women in these proportions: 26.8 percent in math, 20 percent in computer science, 16.8 percent in physics, and 18 percent in mechanical engineering. Finally, full professorships were awarded to women as follows: 7.1 percent in math, 10.3 percent in computer science, 6.1 percent in physics, and 4.4 percent in mechanical engineering (Ceci and Williams 2011).

Rather, the real quarrel centers on the disparity's likely causes. Was du Chatelet correct to attribute the gender gap to persisting discrimination? Was Summers justified in suggesting the possibility of disparate abilities? Or perhaps the issue is substantially more complicated. If so, do the statistics represent a serious social problem demanding intervention or just a natural and acceptable dissimilarity between human genders?

In the opening pages of a new book on the subject, Ceci and Williams recognize that although differences in aptitude occasionally register during early childhood, "the size of the male advantage accelerates" later, beginning in puberty (Ceci and Williams 2010, ix–x). By the end of high school, the authors continue, boys are much more likely to be seated at the "right tail of the distribution"—in the top 10 percent, 1 percent, or 0.1 percent.

Ceci and Williams offer three examples to illuminate the phenomenon. First, Honors Math 55 (Advanced Calculus and Linear Algebra) at Harvard University. Reportedly the most intimidating math class in the country, the majority of enrolling students in Math 55 drop out within a few weeks each year. The distribution by the bitter end of 2006 was, for lack of a better word, dumbfounding. According to the *Crimson* newspaper, "45 percent Jewish, 18 percent Asian, 100 percent male."

Second, the Scholastic Assessment Test–Mathematics (SAT–M). Twice as many boys as girls achieve a score of 650 (19 percent versus 10 percent) or 700 (10 percent versus 5 percent).

According to Ceci and Williams, "The farther out on the right tail one goes (toward the top 0.01%, or 1 in 10,000), the fewer females there are." Males, in fact, "are sometimes overrepresented by a factor of 7 or more to 1."

Finally, the Putnam Mathematical Competition—a six-hour intercollegiate test administered every December to undergraduate students in the United States and Canada by the Mathematical Association of America. Putnam winners have gone on to lead illustrious careers in math, and several have become Nobelists and Fields Medalists. Predictably, by this point, females are rare among the top five scorers, who are dubbed Putnam Fellows. Since 2000, in fact, only three of fifty-one Fellows were women.

Clearly, we have cause to be concerned, but researchers aren't convinced that girls lack the necessary skills. In 2008, for example, a team led by University of Wisconsin psychologist Janet Hyde concluded that at least "for grades 2 to 11, the general population no longer shows a gender difference in math skills, consistent with the gender similarities hypothesis," which proposes that males and females are similar on most, but not all, psychological variables (Hyde et al. 2008).

After analyzing the math scores of more than seven million students from across the United States, Hyde found "trivial differences" on average, coupled with some "unexplained" evidence of slightly greater variability among males. Unfortunately, the state-administered tests were incapable of assessing the students' relative abilities to solve more complex problems—in other words, to test for skills most crucial for advanced work in STEM careers.

In early 2010, two members of Hyde's team collaborated with Villanova University psychologist Nicole Else-Quest to probe the issue more broadly and inclusively by evaluating data gathered from two previous studies, the Trends in International Mathematics and Science Study (TIMSS) and the Programme for International Student Assessment (PISA) (Else-Quest et al. 2010). TIMSS tests were generally easier and more sensitive to curricula or institutions; PISA exams were more difficult and emphasized math literacy and its practical application. Together, these data sets represented 493,495 students aged fourteen to sixteen from sixty-nine nations.

No one seriously disputes the statistical facet of female underrepresentation among the higher echelons of the science, technology, engineering, and math fields. The real quarrel centers on the disparity's likely causes.

In terms of math achievement, Else-Quest's results, like Hyde's, substantially support the gender similarities hypothesis because the sizes of all mean effects were "very small, at best." The largest effect was in the space/shape domain of the PISA, consistent with historical evidence of male superiority in mental rotation skills. The team was quick to point out, however, that gender disparities in this area can be mediated through appropriate education, as other studies have shown.

Even so, Else-Quest offered two possible explanations for the PISA gender gap. The first is rooted in the greater male variability hypothesis, which predicts no discrepancies on average but more top performers among males. However, boys didn't outperform girls on the most challenging TIMSS problems demanding creative or strategic reasoning. "Thus," the team cautioned, "comparisons between TIMSS and PISA regarding test difficulty should not be overplayed as support for the greater male variability hypothesis."

The second explanation spotlights society-based gender inequities. More pertinent here, Else-Quest suggests, is the gender stratification hypothesis, which posits performance gaps closely related to cultural variations in opportunities for females. Indeed, effect sizes revealed considerable variability across nations, and, despite similar achievement levels, boys regularly reported more positive attitudes and affects toward math. So, do societal valuations of math proficiency among young females affect achievement? Consistent with stratification, the team judged that "girls will perform at the same level as their male counterparts when they are encouraged to succeed, are given the necessary educational tools, and have

visible female role models excelling in mathematics."

At about the same time, Ceci, Williams, and Cornell colleague Susan Barnett reviewed more than 400 articles and book chapters to reconcile competing claims of biological and sociocultural causation (Ceci et al. 2009). In the end, they pronounced the evidence for each contention to be both contradictory and inconclusive.

First, if underrepresentation were solely the function of ability, women should still occupy at least twice as many high-end science positions as they do. Second, although women still experience unequal childrearing responsibilities in many if not all cultures, such inequity should result in women having inadequate time for all professional careers to the same degree, which doesn't seem to be the case.

Disparate abilities and cultural attitudes might play important roles, the trio agreed, but only a "confluence of factors" can account for all salient data. "Of these factors," they concluded, "personal lifestyle choices, career preferences, and social pressures probably account for the largest portion of variance." Math-proficient women tend to prefer non-math careers and are more likely to relinquish them as they advance. They are also more likely than men to possess outstanding verbal competence and, thus, the additional option to flourish in law, the humanities, or medicine.

According to Ceci and Williams, "The tenure structure in academe demands that women who have children make their greatest intellectual achievements contemporaneously with their greatest physical and emotional achievements, a feat fathers are never expected to accomplish," resulting in career choices "men are not required to make." But in order to counteract the "child-bearing penalty," as they term it, the team suggests that universities consider deferred start-up tenure track positions and part-time work that segues into full-time tenure track employment as children mature.

> "The tenure structure in academe demands that women who have children make their greatest intellectual achievements contemporaneously with their greatest physical and emotional achievements, a feat fathers are never expected to accomplish...."
> — Stephen Ceci and Wendy Williams

Finally, on February 7 of this year, Ceci and Williams published a hard-hitting and no doubt divisive paper addressing persistent and pervasive claims of sex discrimination in interviewing, hiring, and grant and manuscript reviewing (Ceci and Williams 2011). After reviewing twenty years of data, Ceci and Williams—married with three daughters of their own—decided that the evidence of discrimination against women in math-intensive fields is "aberrant, of small magnitude," and "superseded by larger, more sophisticated analyses showing no bias, or occasionally, bias in favor of women."

In agreement with their most recent work, Ceci and Williams surmised instead that the gender gap results primarily from women's career preferences and fertility and lifestyle choices, "both free and constrained." Adolescent girls tend to gravitate toward careers focusing on people as opposed to things, the couple found, and female PhDs interested in childrearing are less likely to apply for or maintain tenure track positions. As a secondary explanation, Ceci and Williams again pointed to evidence for upper-tail disparities in cognitive ability.

The authors briefly addressed the thorny question of solutions as well, emphasizing the need to move beyond historical causes. But if the existing bases of female underrepresentation are mostly a function of female preferences—for non-math or less math-intensive careers, or for reproduction and childrearing—is it really "underrepresentation" in any meaningful sense of the word? If so, does it represent a problem justifying remedies involving sacrifices from others, average taxpayers in particular? Perhaps some arrangements would benefit many and harm none. But others implicating the commitment or reallocation of valuable resources ought to be vetted thoroughly at all levels of society. ■

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Is There a 100C Grain of Truth to Homeopathy?

Q: **I recently read the book *13 Things That Don't Make Sense* by Michael Brooks. The last chapter, which was on homeopathy, indicated that some researchers have found validity to homeopathy. Is there any truth to this claim?**

—R. James

A: It's fitting that homeopathy was included in a book about things that do not make sense, because homeopathy is one of the world's best known "alternative medicines" that is ineffective and does not make any sense. Homeopathy was invented about 200 years ago by a German doctor named Samuel Hahnemann. He believed that medicines actually become more effective the more they are diluted—an idea contrary to what we know about physics and pharmacology. If homeopathy worked, it would imply that water has "memory" (Novella 2011), violating basic rules of physics and science. Homeopathic medications are often so literally watered-down that they don't contain a single molecule of the original medicine or substance. Depending on how diluted the solution is—expressed on the label as X (a ten-fold dilution) or C (a 100-fold dilution)—there may be no active ingredient left in the "medication"; it is just water. Homeopathic medicines have not been shown to work any better than placebos, yet many people use and endorse homeopathy.

Is there a body of quality, peer-reviewed research showing that homeopathy is effective? In March 2010, the British Science and Technology Select Committee released the results of a comprehensive analysis of whether homeopathy has any scientific validity. The report is devastating to the pseudoscience of homeopathy:

> The Committee concluded—given that the existing scientific literature showed no good evidence of efficacy—that further clinical trials of homeopathy could not be justified. . . . The Committee carried out an evidence check to test if the Government's policies on homeopathy were based on sound evidence. The Committee found a mismatch between the evidence and policy. . . . There is no evidence that homeopathy works beyond the placebo effect. . . . The Committee concurred with the Government that the evidence base shows that homeopathy is not efficacious and that explanations for why homeopathy would work are scientifically implausible. . . . Given that the existing scientific literature showed no good evidence of efficacy, further clinical trials of homeopathy could not be justified.

(See also Ernst 2010 for more on the pseudoscience of homeopathy.)

Even professional homeopathic practitioners admitted in testimony before the Committee that basic claims made about homeopathy have never been tested. For example, the director of the Royal London Homeopathic Hospital, Peter Fisher, asserted that for homeopathy to work it is very important that the solutions be shaken. Asked how much shaking is required to make sure that the medication is effective, Fisher said he didn't know because that issue "has not been fully investigated." This is a stunning and revealing admission from one of England's top experts on homeopathy. Homeopathy has been around for over two centuries, and yet during all that time apparently not a single homeopathy practitioner has bothered to do any scientific testing to find out how to make sure the product is effective. ■

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The 9/11 Truth Movement: The Top Conspiracy Theory, a Decade Later

After ten years, the pesky 9/11 Truth movement has refined its arguments but still hasn't proved the attacks were an inside job. Their key claims are refuted on multiple grounds.

DAVE THOMAS

The conspiracy theories started flying just days after the September 11, 2001, terrorist attacks on New York and Washington, DC. Over the decade since, several technically elaborate claims have been refined by the "9/11 Truth" movement. Do these intricate arguments—including the rapid collapses of the towers, alleged evidence of thermite usage at Ground Zero, and the collapse of World Trade Center (WTC) 7 (a forty-seven-story building damaged by the fall of WTC 1) "into its own footprint at freefall acceleration"—disprove the mainstream consensus that the September 11, 2001, attacks were the work of al-Qaeda terrorists using hijacked airplanes? In a word: No.

The Players

Dylan Avery and Jason Bermas, the creators of the low-budget documentary film *Loose Change*, did much to give the 9/11 Truth movement significant momentum in 2005 and in following years. The film, which has undergone several revisions, has been shown on many television stations but is primarily an Internet and DVD phenomenon. Its basic claims are that Flight 77 could not have accounted for the damage at the Pentagon, that the Twin Tower fires were insufficient to cause their collapse, and that cell phone calls from the hijacked airplanes would have been impossible at the time (Avery 2009).

David Ray Griffin is a theologian whose voluminous writings on 9/11 are frequently cited by other 9/11 theorists. NASA scientist Ryan Mackey has written a very thorough critique of Griffin's claims (Mackey 2008).

Once known as Fleischmann and Pons's competitor for "cold fusion" research in Utah, Steven Jones has written several 9/11 Truth articles. His work with others (including chemist Niels Harrit of Denmark) on detecting nanothermite in WTC dust is frequently cited as "peer-reviewed research" that proves "inside job" claims.

Physics teacher David Chandler has produced several papers and Internet videos contending that high school physics easily shows that the tower collapses could not have happened from gravity alone. He claims this proves that explosives must have been used.

In the past few years, architect Richard Gage's group, Architects and Engineers for 9/11 Truth (AE911 Truth), has provided "Truthers" with the ability to claim that thousands of engineering and architecture professionals demand a new investigation into the cause of the attacks. Gage travels the world giving presentations, and his group puts on news conferences and mock debates several times a year (but most often around September 11, the anniversary of the attack) (Thomas 2009; Thomas 2010c).

Hollywood stars who have publicly supported 9/11 Truth claims include Rosie O'Donnell, Charlie Sheen, and Ed Asner. Sheen often talks 9/11 with radio host Alex Jones (www.infowars.com). These celebrities frequently cite (and sometimes mangle) claims made by Truther proponents like Griffin and Gage. Former wrestler and Minnesota governor Jesse Ventura has done two 9/11 conspiracy shows on his TruTV series *Conspiracy Theory* (see "Dave Thomas vs. Jesse Ventura: The Skeptical Smackdown" on page 41).

The Claims

As with any well-developed pseudoscience, literally thousands of individual arguments can be advanced in support of the proposition that the United States secretly carried out the September 11 attacks. This report will examine the most enduring and oft cited of these claims: "free fall" of the towers, reports of thermite and molten steel, and WTC 7's curious collapse. Some of the factions that have developed (such as the "no-planers") will also be described briefly.

Claim One: "The Twin Towers collapsed at free-fall accelerations through the path of greatest resistance."

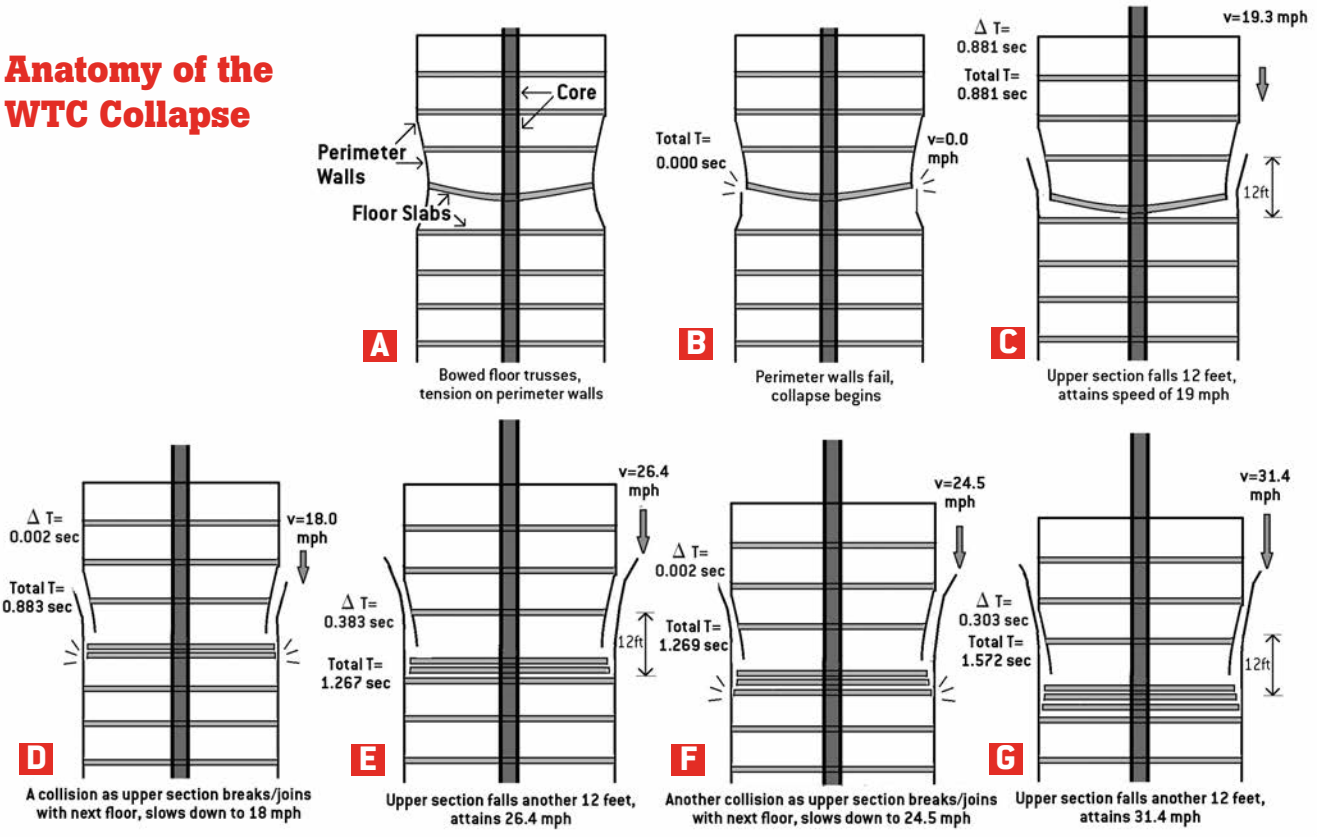
Perhaps the most bizarre aspect of September 11 was the rapid destruction of both 110-story Twin Towers: after the collapses began due to cascading structural failures at the airplane impact locations, each tower fell completely in just fifteen to twenty seconds. Mainstream scientific analyses, including years of work by the National Institute of Standards and Technology (NIST), generally looked at the *cause* of each collapse: the intense fires (started by jet fuel and fed by office contents and high winds) eventually caused floor trusses to sag, pulling the perimeter walls inward until they finally snapped. At this instant, the entire upper section of each tower fell the height of one floor, initiating an inevitable, progressive, and utterly catastrophic collapse of each of the structures.

While the mainstream explanation (dismissed as the "official story" by 9/11 Truthers) usually ends with the initiation of these unstoppable collapses, the 9/11 Truth movement's attacks begin there. Gage of AE911 Truth says on that group's website, "Destruction [of the Twin Towers] proceeds through the path of greatest resistance at *nearly* free-fall acceleration" (Gage 2011; emphasis added). Many 9/11 Truther pundits drop the "nearly" and say simply that the collapses *were* at free fall. Truthers then insist that free fall acceleration indicates a complete lack of resistance, proving that the structures were demolished with explosives. We are also told that the sheer mass of the towers, "80,000 tons of structural steel," would simply resist collapse.

How *could* the buildings fall so quickly? It's been explained very well in the technical literature by Northwestern's Zdenek Bazant, PhD, and others (see, for example, Bazant 2008). I've developed a simpler physics model of the progressive collapses that agrees quite well with the main points of Bazant's more rigorous results (Thomas 2010b). Here are some of my findings:

- Each floor of the towers contained over two million kilograms of mass. The gravitational potential energy of a standing tower with twelve-foot floors extending upward 110 stories can be calculated straightforwardly; it comes to over 420 billion joules of energy, or the equivalent of 100 tons of TNT per tower. This energy, which was released completely during the collapses, is more than the energy of some of the smaller nuclear weapons in the U.S. arsenal, such as the W-48 (72 tons TNT) (Sublette 2006). This is where the energy required to break columns, pulverize concrete, and expel debris through windows came from. (Truthers often compare such expulsions of air and debris, visible several floors below the collapse fronts, to "squibs," explosive devices often used in demolitions. However, they are readily explained by pressure changes as the towers, acting like a gigantic bi-

Anatomy of the WTC Collapse



In this stylized diagram (not to scale), a few steps in the collapse of one of the towers are illustrated. The first drawing, which shows a tower about an hour after the plane's impact, indicates that the heated and sagging floor trusses are putting considerable stress upon the outer perimeter walls **(A)**. The failure of the perimeter walls marks the start of the collapse at time zero **(B)**. As the upper section falls twelve feet, it attains a velocity of 19 mph **(C)**. As the upper section breaks, striking and incorporating the first floor, its reduced momentum results in a slightly slower speed of about 18 mph **(D)**. It takes less than half the previous fall time to drop the next twelve feet, as the upper section now has a head start; it ends this drop with a speed of about 26 mph **(E)**. Another brief collision slows the growing upper section to about 24 mph **(F)**, after which it drops another twelve feet, attaining a speed of about 31 mph **(G)**. The collapse continues in this manner, with major increases of speed during the free-falls between floors and much smaller reductions of speed as each floor is broken and consumed by the growing mass. Although there is resistance at every step, there is less time between the collapses of each successive floor due to the ongoing speed increases. The very bottom floors are crushed in just 0.07 seconds at speeds of over 100 mph. The total time for the collapse is on the order of fifteen seconds.

cycle pump being compressed, collapsed.)

- The Twin Towers used a "tube within a tube" architectural design, which provided considerable open office space in the interiors of the Towers. Much of the structural support was provided by a dense grouping of thick central core columns in the interior and the perimeter walls on the outside. When the towers began to collapse, large parts of the inner cores (called "the Spires" in 9/11 Truth circles) were actually left standing, briefly, before they, too, toppled over. The perimeter walls were largely forced to peel outward in large sections, producing the iconic images of Ground Zero with which we're all familiar. Between the outer perimeter and the inner core, the weight of the upper sections plowed through one floor after another, breaking the floor connection brackets and support columns, pulverizing concrete decks, and gaining momentum and mass with each additional floor failure. Had the buildings been constructed differently (the Port Authority was allowed to circumvent some existing New York buildings requirements for the Towers), the collapses might not have even happened (Young 2007).

- Even the 9/11 Truth movement's most eminent physicists are confused about the basic principle of the difference between static and dynamic forces. A piece of paper, taped across a jar's opening, will support a heavy coin such as a quarter indefinitely (static load). However, if the coin is dropped from just a few inches up, it will tear right through the paper (dynamic load). Given the information at hand—for example, the mass of the upper section of the north tower (fifty-eight million kilograms), the distance it fell (3.8 meters, about twelve feet), and the stiffness/rigidity of the lower structure itself, the dynamic force imparted on the lower section can be estimated as some *thirty times* the upper portion's weight. This is many times the lower structure's safety margin, which explains why it was quickly overwhelmed.

- Once progressive collapse began, there were decreasing time intervals of free fall (between floors), punctuated by very brief, incredibly violent collisions—*decelerations*—of the upper mass, for each floor in turn. There was resistance at every step of the collapse, as the upper section collided with and incorporated each floor below. Conservation of momentum shows that the reductions in falling speed were slight as each floor was impacted, going as the ratio of floors before to floors after (e.g. 14/15, or about 94 percent, for the first impact). Accordingly, the upper section fell from rest to about 19 mph, was slowed down to 18 mph by the first impact, continued to fall until a speed of 26 mph was reached, was then slowed down to 24 mph by another impact, and so on. While the first plunge lasted about nine-tenths of a second, the upper section took only four-tenths of a second to fall through the next floor, three-tenths of a second for the next one, and so on until the bottom floors, which were crushed at a rate of just *seven-hundredths of a second* each, at speeds of over 100 mph. Yes, there was resistance at every step, as many tons of structural steel was demolished; yet the entire process, like an avalanche, lasted only fifteen to twenty seconds, about 50 to 100 percent longer than true "free fall" would have lasted.

- Physics teacher David Chandler's measurements of the first seconds of the collapse of the North Tower (WTC 1) showed that it fell with increasing speed but at only *two-thirds of gravitational acceleration* (g) (Chandler 2010). Chandler argues that this means the bottom section exerted a constant *upward* force of one-third of the upper section's weight upon its mass, and he declares that this force should have been much larger, indicating that "some sort of controlled demolition was at work."

- Second, Chandler argues that being a Newtonian action/reaction pair, the impact force of the upper section on the lower section was *only a third of the upper part's weight*. However, I've found that his estimate of the downward impact force was too low by a factor of *one hundred*. In addition, I found that the actual process—a series of twelve-foot free falls punctuated by violent and brief collisions with each floor—would have resulted in an average acceleration of *precisely* what Chandler measured for the start of the collapse of WTC 1, namely 2/3 g. (By the end of the collapse, my calculations indicate an average acceleration of only 1/3 g, but this can't be measured in dust-obscured videos.)

The thermite reaction is very hot, but it is also very slow compared to high explosives.

Claim Two:
"Nano-thermite and military-grade explosives were found in dust from the towers. Tons of melted steel were found in tower debris."

Real controlled demolitions commonly use explosives to topple large buildings. However, the hallmarks of actual demolitions (the characteristic "boom-boom-boom-boom" sounds and the flashes of high explosives) were completely absent in Manhattan on the morning of September 11, 2001. Many 9/11 Truth advocates, including architect Richard Gage, insist that high explosives *must* have been used to bring down the Twin Towers, as they say this

is the only process that can possibly explain the "ejection of debris hundreds of feet from the towers." However, they simultaneously insist that thermite or a derivative (thermate, nanothermite, etc.) was used *instead*, so as to topple the towers *quietly*. (This is but one of many instances in which 9/11 Truth claims flatly contradict each other.) Thermite itself fails as an explanation for the destruction of the Towers on many levels:

- The thermite reaction, which takes place between iron oxide (rust) and powdered aluminum, is practical for welding train tracks in the field and for destroying engines of vehicles that must be left behind during combat operations. The self-sustaining reaction, once initiated with heat, produces significant volumes of molten iron, which can melt and cut iron structures beneath it. For thermite to melt through a normally vertical steel beam, however, special high-temperature containment must be added to prevent the molten iron from simply dropping straight down uselessly. The thermite reaction is very hot, but it is also very slow compared to high explosives. Thermite is simply not practical for carrying out a controlled demolition, and there is no documentation of it *ever* having been used for that purpose.
- Jesse Ventura hired New Mexico Tech to show how nanothermite can slice through a large steel beam. The experiment was a total failure—even in the optimum (horizontal) configuration, the layer of nanothermite produced lots of flame and smoke but no actual damage to the massive I-beam tested. However, Ventura's TruTV *Conspiracy Theory* show slyly passed it off as a rousing success (Thomas 2010a).
- Niels Harrit and Steven Jones, along with several coauthors, published the "peer-reviewed" paper "Active Thermitic Material Discovered in Dust from the 9/11 World Trade Center Catastrophe" in the *Bentham Open Chemical Physics Journal* (Harrit 2009). This article does not make the case for thermite use on 9/11. The paper examined "distinctive red/gray chips" found in WTC dust (unfortunately, with no chain of custody for the dust), and these were claimed to be thermitic because of their composition (iron oxides and pure aluminum) and other chemical properties. However, the presence of rust and aluminum does not prove the use of thermite, because iron oxide and aluminum are found in *many* common items that existed in the towers. Furthermore, the authors admit that their "differential scanning calorimeter" measurements of the supposed thermitic material showed results at about 450 degrees C *below* the temperature at which normal thermite reacts (Fana 2006). Finally, the scan of the red side of the "thermitic material" of Harrit/Jones is a dead-on match to material Jones himself identified as "WTC Steel Primer Paint" in his Hard Evidence Down Under Tour in November of 2009 ("Sunstealer" 2011).
- Harrit's article describes the red portion of the chips as "unreacted thermitic material." But while thermite may be slow, it does not stop its reaction once it has begun. Because thermite supplies its own oxygen (via iron *oxides*), it can even burn underwater. Suggesting that the samples show partially reacted thermite is preposterous. Claiming that thermite would explain molten pools of steel weeks and months after the attack is equally preposterous.
- The article's publication process was so politicized and bizarre that the editor-in-chief of the *Bentham* journal that featured Jones's article, Marie-Paule Pileni, resigned in protest (Hoffman 2009).
- Thermitic demolition should have created copious pools of melted steel at Ground Zero, but nothing remotely like this was ever found. Truthers say iron microspheres found in the rubble indicate thermite; since hot fires and spot-welding do produce very tiny spheres of iron, though, these "microspheres" are not unexpected. Pictures of cranes holding red-hot materials in the rubble are said to show molten steel. Had this been the case, however, the crane rigs would have immediately seized up (Blanchard 2006). No reports of "molten steel" in the tower basements have ever been credibly verified (Roberts 2008). Some Truthers claim that a few pieces of sulfidized "eutectic" steel found in the towers proves thermate (thermite with sulfur) usage, but this occurred because sulfur, released from burned drywall, corroded the steel as it stewed in the pile for weeks (Roberts 2008).

Thermite is simply not practical for carrying out a controlled demolition, and there is no documentation of it *ever* having been used for that purpose.

Courtesy of the Prints and Photographs Division, Library of Congress

Claim Three:
"Tower 7, which wasn't hit by a plane, collapsed neatly into its own footprint."

The enigma of WTC 7 is becoming increasingly popular in Truther circles. We're told that it wasn't hit by a plane and was subjected to just a few "small office fires." Yet it collapsed anyway, late in the afternoon of September 11, "falling neatly into its own footprint at freefall acceleration, just like a normal controlled demolition." In particular, Truthers point to a brief period of freefall (2.25 seconds) that was confirmed by NIST in its WTC 7 final report (Sunder 2008; NIST 2010) as proving that the building was purposely imploded. However, WTC 7, too, fails to prove 9/11 was an "inside job":

- What is often conveniently left out of the story are actual reports from NYFD firefighters at the scene, which describe huge, raging, unfought fires on many floors at once and visible deformations and creaking of the building prior to its collapse (Roberts 2008). Tower 7 was not hit by an airplane; however, it *was* struck by a 110-story flaming skyscraper, the North Tower. The fires raged for hours, and they eventually caused a critical column (#79) to fail because of thermal expansion; NIST determined that this column was crucial to the building and could even be considered a design flaw. Its failure would have collapsed the building even without the other structural damage from WTC 1's collapse and the fires.
- WTC 7's brief 2.25 seconds of free fall is now the Truthers' best "smoking gun." The claim usually goes like this: "The fifty-eight perimeter columns would have resisted and slowed the collapse to much less than freefall. The 'freefall' of WTC 7, admitted to by NIST, proves it was controlled demolition." The problem is that this is a straw man argument. NIST found the collapse occurred in *three* stages. The first stage, which lasted 1.75 seconds, is when the fifty-eight perimeter columns were buckled; during this interval, the rooftop actually fell only about seven feet. This is because the breaking of columns saps speed, indeed making the collapse slower than free fall. In the second stage, which lasted 2.25 seconds, the already-buckled columns provided negligible support, and the north face of the structure free-fell about eight stories. (Try taking a plastic drinking straw and buckling it by folding it over and then pushing down on the bent straw with your hand. The crimped straw provides almost no resistance to vertical forces, and neither did the buckled columns of WTC 7.) The third stage described by NIST, which lasted 1.4 seconds, was again less-than-free fall, as the structure fell another 130 feet as it impacted more non-buckled structures toward the bottom of the building (NIST 2010).
- The other half of the equation is that WTC 7 resembles a "classic controlled demolition" because it supposedly "imploded, collapsing completely, and landed in its own footprint" (Gage 2011). In actuality, it twisted and tilted over to one side as it fell, and parts of the building severely damaged two neighboring buildings (the Verizon and Fiterman Hall structures). When challenged with the obvious fact that Tower 7 spilled far *outside* its footprint, however, Truthers will often change their tune and start saying that any re-

How Will bin Laden's Death Affect the 9/11 Truth Movement?

"9/11 was an Inside Job" banners were nowhere to be seen at the spontaneous celebrations at Ground Zero and the White House upon the announcement of the death of Osama bin Laden at the hands of U.S. Navy SEALS on May 1, 2011. And, in a stunning apparent reversal of his position on 9/11, Charlie Sheen tweeted **"Dead or Alive. WE PREFER DEAD! Well done SEAL team! AMERICA: #WINNING that's how we roll. . . . c."**

Bin Laden's apprehension will do little to change the minds of dedicated 9/11 Truthers, however. The day after bin Laden's death was announced, 911blogger.com was flooded with comments like these in its comment sections (http://911blogger.com/news/2011-05-01/sources-al-qaida-head-bin-laden-dead):

- "So, they buried Osama bin Laden AT SEA! Incredible. . . . Just like at the WTC, the Pentagon and that field in PA, they disposed of the evidence."
- "This is cover for the 10th anniversary, which is just around the corner."
- "I think Osama bin rottin' for years now."
- "I don't know when Bin Laden died, or even if he's dead though I think we can assume that he is dead. We also know he didn't topple the towers. He may have thought he was flying planes into the towers, he may not have."
- "Our top Special Ops team, with night vision goggles, that could hit a dime from far away, could not hit his gun hand?"
- "I wonder if the people that created Obama's Birth Certificate will be the same ones that create Osama's Death Certificate."

9/11 Internet Resources

The James Randi Educational Foundation (JREF) Forum
http://forums.randi.org, 9/11 Conspiracy Theory area.
If you need every single 9/11 Truth claim sliced and diced a thousand ways, this is your site.

Mark Roberts ("Gravy")
http://sites.google.com/site/wtc7lies.

***Screw Loose Change* blog**
http://screwloosechange.blogspot.com.

AE911Truth.Info (Joseph Noble)
"Answering the questions of Architects and Engineers for 9/11 Truth"
http://ae911truth.info/wordpress/.

9/11 Myths: Reading between the Lies
www.911myths.com/indexold.html.

semblance to a natural collapse is *part of the cover-up*.

Factions within 9/11 Truth

Early on, it was mainly MIHOP ("Made it happen on purpose") versus LIHOP ("Let it happen on purpose"). Nowadays most serious Truthers down-pedal the "no-planers," who say no plane hit the Pentagon or even the Towers. There is considerable friction between some groups, with certain 9/11 Truth groups attacking others as "disinformation agents." However, 9/11 Truth is mostly a big tent. Many "serious" groups such as AE911 Truth quietly champion "no-planers" such as former pilot Dwain Deets, engineer Anders Bjorkman, and Craig Ranke of Citizen Investigation Team (CIT) (Gage 2011). Gage formally withdrew his support of CIT in February 2011, even as his website touted 9/11 articles in *Foreign Policy Journal*, an online publication notorious for its frequent forays into Holocaust denial.

Conclusion

As Ted Goertzel pointed out in his recent SKEPTICAL INQUIRER article "The Conspiracy Meme: Why Conspiracy Theories Appeal and Persist," "When an alleged fact is debunked, the conspiracy meme often just replaces it with another fact" (Goertzel 2011). In another ten years, will the 9/11 Truth movement have developed new arguments, or will it stick with the polished claims discussed here? Either way, it appears this American conspiracy theory classic is here to stay.

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Dave Thomas vs. Jesse Ventura: The Skeptical Smackdown

Jesse Ventura, television host and coauthor of books about conspiracy theories, chose to ignore skeptical and scientific rebuttals to his claims.

BENJAMIN RADFORD

In April 2010, I received a review copy of Jesse Ventura's book *American Conspiracies*, in which the former pro wrestler, Navy SEAL, and former Minnesota governor examines conspiracy theories, "looking closely at the theories that have been presented over the years and examining the truth as well as the lies." Ventura is also the host of TruTV's *Conspiracy Theory*.

As I skimmed through it, penciling notes in the margins about logical fallacies I encountered, I finally zeroed in on Chapter 12: "What Really Happened on September 11?" I had recently read physicist Dave Thomas's work debunking several 9/11 conspiracy theories, and it occurred to me that I should try to get Ventura's answers to some of Thomas's questions.

On the cover of his book, Ventura looks tough and confrontational, ready to challenge anyone in his pursuit of the truth. In fact, the first blurb on the back of the book lauds Ventura's "refreshing … willingness to defend his positions and attack his interrogators." Here was a perfect chance to have informed people from both sides present their evidence and answer their critics—to arrange a dialogue between skeptics and believers.

I contacted the publicist for Ventura's book, Jen Hobbs, who assured me that Ventura would be happy to do an interview and answer any questions about the claims in his book. I then contacted Thomas, head of New Mexicans for Science and Reason, who had not only written about 9/11 conspiracies but whose colleague Van Romero, vice president of research at New Mexico Tech, had actually appeared on Ventura's show.

Thomas sent me a dozen or so

Jason Webber / Splash News/Newscom

questions he wanted to ask Ventura for the proposed interview. I contacted Hobbs, told her I had a physicist ready to debate Ventura, and asked her when we could arrange the live interview. A few days later I was told that Ventura was in Mexico and would not, after all, be available for either a live or taped interview. But if I could e-mail her the questions for Ventura, she'd see that he got them and responded.

into the issues. Six weeks later, on June 15, Hobbs finally responded: "He hasn't had the time to answer the questions. He is filming the second season of his TV show. If you'd like, I can ask his co-author Dick Russell to answer the questions … or you can come up with different questions to ask him."

The response was interesting. Ventura had seen Thomas's questions and apparently refused to answer them. It

Weeks came and went; I sent follow-up reminders and e-mails asking when I could expect Ventura to reply. Surely if Ventura's facts and arguments were solid, he would be happy to demolish Thomas's arguments.

I was disappointed, but I figured that something was better than nothing; at least Ventura would have to answer Thomas's questions. I sent the list of questions and waited. And waited. On May 4 I received an e-mail from Hobbs stating, "I sent the questions to Jesse Ventura—I will forward them on back to you when he answers them." Weeks came and went; I sent follow-up reminders and e-mails asking when I could expect Ventura to reply. Surely if Ventura's facts and arguments were solid, he would be happy to demolish Thomas's arguments.

Still, some of the questions may have required time and research, and I wanted to give Ventura all the time he needed; I didn't want him to claim that he hadn't had time to adequately look

seemed that if I wanted to ask some *different* questions—say, softball questions about his TV show or whether he thought Lee Harvey Oswald was a patsy—then Ventura would be happy to answer *those* questions.

I suspected that both Ventura and Hobbs were shocked by the depth and knowledge behind the questions. Typically authors and experts do not expect to be challenged or questioned by knowledgeable interviewers during publicity interviews. It's far more common to be interviewed by a weekend anchor who knows nothing about the topic than by an expert. Ventura, who had made a career out of talking and challenging others, suddenly had nothing to say. It seems that the tough, no-nonsense Jesse Ventura was scared of Dave Thomas, our resident 190-pound skeptical physicist who is pushing sixty.

I refused to change the questions; I wanted real answers. If Ventura was unwilling or unable to answer questions about his own book, then Ventura's coauthor Dick Russell was apparently the best I was going to get. I agreed, and the questions were sent to Russell around June 15. Another five weeks went by, and I still had gotten no response from Ventura, Russell, or their publisher.

After my fourth unanswered e-mail, I finally sent the publicist the following e-mail:

> I have been in touch with you over the past months regarding Jesse Ventura's recent book on conspiracy theories. I wanted to interview Ventura, but after a few weeks you said he was not available for an interview; I was then asked to submit a series of questions which he would respond to by e-mail. I waited over a month before being told that he would not reply to the questions, and I was then told that his co-author would respond to the questions; that was six weeks ago. Since then I have sent repeated e-mails inquiring about the status of the interview you offered to set up, and have not heard back. Deadline after deadline, promise after promise passed. I have been in the publishing business for 15 years, and I have never encountered such a staggering lack of professionalism. If Ventura was not going to do interviews to promote the book, you should not have offered them. I understand that authors are sometimes uncooperative, but if that was the case you should have made that clear and not strung me along for literally months while you promised less and less, and in the end delivered nothing.

Jesse Ventura was given multiple chances to answer simple, straightforward questions about claims he made in his book and on his TV series regarding the September 11 conspiracies, and he refused to respond. As Thomas Paine noted, "It is error only, and not truth, that shrinks from inquiry."

A Bestiary of the 9/11 Truth Movement: Notes from the Front Line

Two social scientists describe their experience confronting the 9/11 Truth movement in the United Kingdom after they published a paper linking conspiracy theories with extremist ideology. They argue that the 9/11 Truth movement is composed of three groups and that each accepts the conspiracy meme for different reasons.

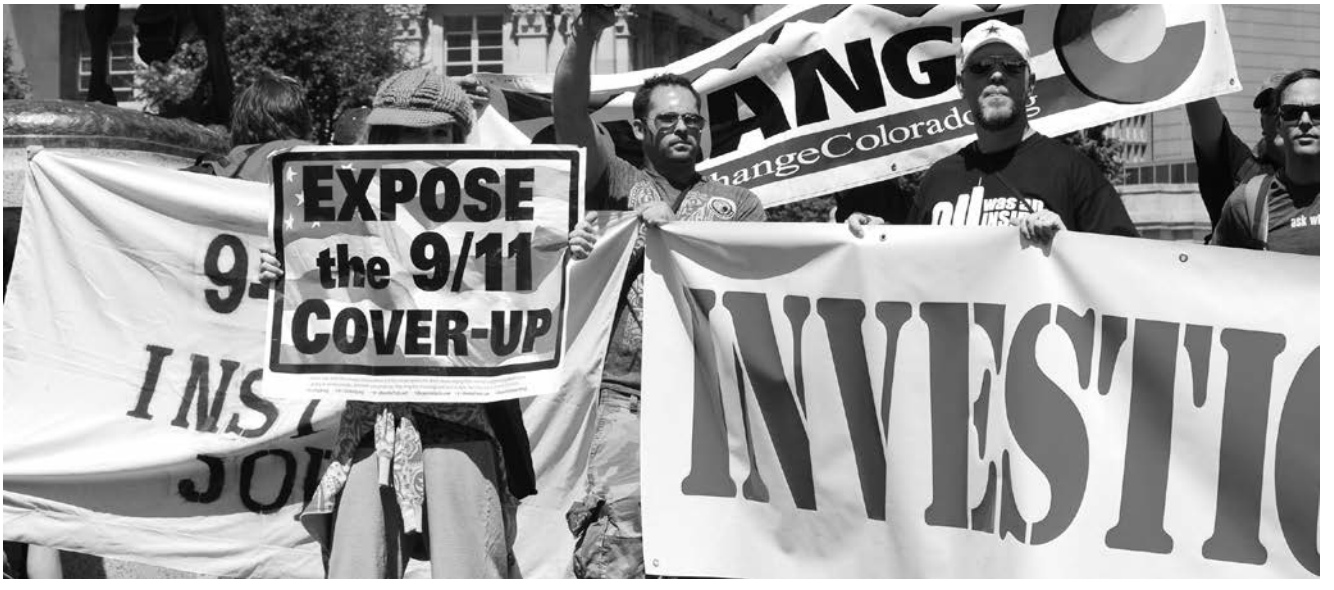
JAMIE BARTLETT and CARL MILLER

"I was fifty-five years old when I began to understand the world in my view. . . . I'm actually quite certain, and I don't want to believe it . . . that the people we call the government murder us in order to start wars that make money for them."[1]

In his article "The Conspiracy Meme: Why Conspiracy Theories Appeal and Persist" (SI, January/February 2011), Ted Goetzel suggests conspiracy theorizing is a meme—a way of thinking that spreads, survives, or dies according to a process analogous to genetic (termed mimetic) selection. The conspiracy meme competes with others, such as the scientific meme or the fair debate meme, as a way of describing and making sense of the world.

Conspiracy theorizing is, according to Goetzel, a rhetorical meme that "transforms scientific controversies into human dramas. . . . It uses controversial facts and speculations to undermine scientific evidence." It is a surprisingly resilient and successful meme, a growing body of scholarly literature suggests, because of a growing mistrust in "experts" and established sources of knowledge (Hardwig 1991); an ideological response to structural inequalities (Fenster 1999); and a natural human tendency to seek order in an ever more complex, confusing world (Popper [1945] 2006). Once implanted, it is incredibly difficult to shake.

Over the past year we have been watching and confronting one particular version of this meme: the 9/11 Truth movement. In August 2010, we released a paper about conspiracy theories, "The Power of Unreason." Within hours, the online conspiricist community hit back. Our paper was featured, or mirrored, on literally thousands of websites, blogs, and discussion forums; appeared as a topic on conspiricist radio shows; was mentioned in a dozen YouTube videos; and attracted hundreds of pages of comments and critique from the 9/11 Truth movement.[2]



The crucial point is that "The Power of Unreason" was not actually about the 9/11 Truth movement. As a study of the role of conspiracy theories in extremist and terrorist groups, it mentions 9/11 Truth sparsely and incidentally. That the 9/11 Truth movement responded in such an aggressive manner prompted us to analyze the response itself as a means of understanding this broadly nonviolent movement that nonetheless represents a damaging cultural habit.

The response illustrated, and continues to illustrate, Goertzel's conspiracy theory meme in action. First, the online conspiracy community wrapped the report around faulty preconceptions. The paper was misrepresented in an exaggerated, distorted, inaccurate way that was soon recycled and re-presented within the conspiricist community. The recommendation to teach critical thinking in schools became "pushing propaganda on our children." The recommendation to introduce alternative information into conspiracist sites became a dark, Orwellian plot to end free speech. The key finding that terrorist organizations often use conspiracy theories as part of their propaganda became "Demos accuses the 9/11 Truth Movement as [*sic*] being terrorists."[3] Many of these comments came from people who freely confessed that they had not read our paper.

Quickly, the focus turned onto our organization, Demos, a non-government public education charity. The Greek letter theta, taking the place of the *o* in the Demos logo, became the eye of the Illuminati.[4] As authors, we were roundly accused of being part of the conspiracy itself: at best unknowing, naive, and myopic writers; at worst disinformation specialists or government agents openly supporting state terrorism.[5] This technique of folding any dissenters into an ever-growing conspiracy is precisely what Goertzel predicts: cascade logic. Here, it was a spontaneous, semi-concerted effort to discredit the report and its arguments.

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According to various polls, belief in the 9/11 conspiracy is incredibly high. In the United Kingdom, only 56 percent of the population believes al-Qaeda was responsible for the attacks; some smaller polling suggests that as many as one-third of Americans consider it "very likely" or "somewhat likely" that U.S. government officials either allowed or actually carried out the attacks on September 11, 2001.[6] In fact, it is not quite as simple as that. Based on our encounters, we believe the 9/11 Truth movement is composed of different kinds of people who are involved in the movement for different reasons and derive different types of fulfillment and satisfaction from this engagement. This is a story of a dominant meme finding fertile ground in several psychological habitats.

We've observed groups from three of these habitats. The first can be called the "hardcore" group. Much of the noise of the 9/11 Truth movement is caused by a relatively small, tight-knit group of highly connected, highly motivated individuals. They are prodigious producers of information and theories who spot anomalies and technical inconsistencies. They are veterans of the John F. Kennedy assasination and Moon-landing-hoax theories, and so their worldview favors the "super-conspiracy," linking conspiracies to a hidden overarching, sinister master plan (Cline 2007).

In our debates with them, hardcore 9/11 Truthers claim to be interested only in "facts": the physical "fact" of the free fall speed of the Twin Towers, the collapse of World Trade Center (WTC) 7—which to them proves a demolition—or the "fact" that traces of super thermite have been identified in the Lower Manhattan dust by Steven Jones.

Their arguments, however, are not scientific at all, because the methods used are nonscientific: proponents decide on the answer and then search for corroborating evidence while ignoring the overwhelming peer-reviewed, independent research that suggests that, for example, WTC 7 collapsed in a manner consistent with severe damage from falling debris and fire (National Institute of Standards and Technology [NIST] 2008). This self-avowedly dispassionate search for truth is emotional.[7] The hardcore group's involvement in 9/11 Truth is monochrome and Manichean: it's a "good/bad," "black/white" struggle against an oppressive influence whose existence hardcore members believe they are on the cusp of proving.

The second layer could be called the "critically turned" group. It is often a source of surprise that many young stu-

dents and political activists are part of the 9/11 Truth movement. Some are influenced heavily by that heady bundle of postmodern theory and the critical turn that Geoffrey Elton so memorably termed "the intellectual equivalent of crack" (Elton [1991] 2002). Their approach and language center on the dizzying ideas of relativism and subjective truth and the post-structural deconstruction they allow and demand (Sokal and Brickmont 1998).

But more than anything, the critically turned's membership in 9/11 Truth arises from anger at the political order they will soon inherit. It is too closed. There is too much power in the hands of too few. Their sense of justice and idealism is rudely confronted by a world of state espionage, links between big business and government, and lies over weapons of mass destruction (WMDs). These are as significant as any specific theories about WTC 7 or the size of the hole in the Pentagon outer wall. Their interests often span to other forms of resistance against perceived oppression and injustice: support for Palestine, affiliation with the anti-war movement, and hatred of greedy bankers. It is this group that produces much of the cool, countercultural content of the movement. A recent YouTube video about Demos was set to the electronic dubstep track "Could This Be Real (Joker Remix)."[8] Some of the most popular conspiricist films, such as *Loose Change* and *Zeitgeist*, make great use of atmospheric drumbeats and eye-catching graphics.

Finally there is a much larger, more diffuse group, which we term the illiterati. They are people for whom membership in 9/11 Truth is as much a social and recreational pursuit as an exercise in critical inquiry.[9] Their involvement is predominantly through web 2.0 social networking. Often this user-generated commentary really acts as interactive entertainment masquerading as a public-spirited, free-thinking quest for the truth. They are the worst offenders for flouting the basic tenets of good journalism—accurate quotation, avoidance of misrepresentation, and fidelity of source—and their contributions, almost entirely devoid of genuine intent to find truth, are almost always nakedly and transparently propagandistic. For them, it is the thrill of the chase and participating in a largely online struggle that animates their involvement, not the end result.

Though the conspiracy theorizing meme is the same, its success within the 9/11 Truth movement depends on quite different characteristics depending on its adherent. These unlikely comrades in arms have joined to make a formidable movement. The hardcore group supplies much of the physical organization and structure: its members organize events, discussions, and marches; distribute leaflets; and edit the "peer reviewed" journals. The critically turned have done much to manufacture its broad appeal—giving it a countercultural street cred and, through the production of content and the skillful exploitation of virtual networks, exposure to millions. The illiterati form the group's mass-membership backbone. They provide the thousands of comments and millions of YouTube hits on which the movement's exaggerated claims of popularity and influence are founded. So can anything be learned from this?

The hardcore group claims to share at least the same epistemological rules—rationalism, empiricism, and a grounding of basic scholarly practice and conduct—as skeptics. Yet the emotionalized substrate of this conduct makes broad attempts at logical reasoning—such as pointing out the cascade logic suggested by Goetzel—insufficient. Any chance to believe conspirators exist is good enough for them. Any hanging anomalies or unanswered challenges of the official narrative will be taken as proof of the conspiracy. So the necessary response here is most painstaking: their claims must, as far as is possible, be rebuffed fact by fact, anomaly by anomaly, with the scientific tools they claim to be using.

The critically turned might not accept this approach, because conspiracy theories for them fit in with what they see happening in the world—it is part of a bigger story. The use of logical reasoning could help. Highlighting cascade logic might stick, as might emphasizing other tools of logic and rhetoric. For example, why would the American government, if it wanted to keep this secret, fly planes into the Twin Towers before bringing them down with a controlled demolition? Was flying fully fueled passenger jets into the Pentagon and the center of U.S. business not sufficient? Why did the U.S.

Though the conspiracy theorizing meme is the same, its success within the 9/11 Truth movement depends on quite different characteristics depending on its adherent. These unlikely comrades in arms have joined to make a formidable movement.

Memes must exist within a human ecology. Conspiracy theorizing is not only, or even predominantly, an intellectual process. It is "whole-person": both emotional and social. That is why changing the dominant meme must be done in person.

government not plant WMDs in Iraq—a far easier and equally important subject?

The illiterati have not actually looked at much of the material, but it fits not only with their worldview but also with an explicit position to which they have committed socially and around which they have formed an identity. This makes ideas very difficult to dislodge (Riso et al. 2007). Neither facts nor logic are likely to do much here. We can only address the real structural inequalities that condition a milieu as fertile for such beliefs. This, of course, is a major endeavor. Some smaller changes may help too, such as more critical thinking in schools: a recent study by an independent organization in the United Kingdom found that 43 percent of sixteen- to twenty-four-year-olds base their trust in web content on how the site looks, while 32 percent of twelve- to fifteen-year-olds believe that Google search results are listed in order of accuracy.[10]

Memes must exist within a human ecology. Conspiracy theorizing is not only, or even predominantly, an intellectual process. It is "whole-person": both emotional and social. That is why changing the dominant meme must be done in person: the hard graft of speaking, discussing, and arguing face-to-face. The 9/11 Truth movement has successfully done that. The skeptics must continue to do the same. ■

Notes

1. A direct quote from a very angry man at an event we attended (publicized by 9/11 Truthers as "Demos vs. 9/11 Truth"). He sat in the front row directly across from coauthor Carl Miller and yelled this fairly typical outburst into his face. (Available online at www.vimeo.com/16395101, approximately forty-six minutes and twenty seconds into the video clip.)
2. See, for example, www.infowars.com/government-think-tank-calls-for-infiltrating-conspiracy-websites an www.911truth.org/article.php?story=20100829144303310 (both accessed October 11, 2010).
3. See the Demos blog for a good overview of the response at www.demos.co.uk/blog/engaging-.
4. http://seeker401.wordpress.com/2010/09/06/demos-calls-for-governments-to-infiltrate-conspiracy-sites (accessed October 11, 2010).
5. http://kevboyle.blogspot.com/2010/10/demos-meets-911-truth.html (accessed October 11, 2010).
6. See www.worldpublicopinion.org/pipa/articles/international_security_bt/535.php and Lev Grossman's article "Why the Conspiracy Theories Won't Go Away," *Time* magazine in 2008 (www.time.com/time/magazine/article/0,9171,1531304,00.html).
7. See, for instance, the "personal validation effect": a cognitive bias of considering a piece of information to be correct if it has a personal significance. See B.R. Forer's 1949 article "The Fallacy of Personal Validation: A classroom Demonstration of Gullibility," *Journal of Abnormal Psychology* (volume 44, pp. 118–21.)
8. www.youtube.com/watch?v=nqLOtQb1DwE.
9. See Cass Sunstein for a study of reputational cascades, in which people "profess belief in a conspiracy theory, or at least suppress their doubts, because they seek to curry favor." Sunstein and Vermeule, University of Chicago Law and Economics Research Paper Series, Paper No. 387, p.12.
10. UK children's media literacy. 2009. Ofcom. London.
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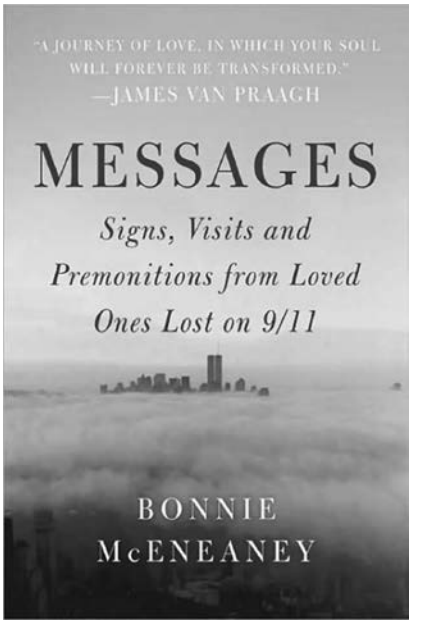
‘Messages’ from the 9/11 Dead

The terrorist attacks of 9/11 triggered a massive investigation and a retaliatory war. They also prompted numerous surviving family members to believe they were receiving otherworldy communications from their deceased loved ones. But were they?

JOE NICKELL

On the morning of September 11, 2001, concerted terrorist attacks on New York’s World Trade Center and the Pentagon building in Arlington, Virginia, claimed nearly 3,000 victims. They also resulted in America’s largest criminal investigation, a war in Afghanistan, and endless controversy sparked by conspiracy theorists.

Many of the family members and friends of the victims also began to convince themselves that there was a mystical aspect to the tragedy. Some claimed there had been intuitive foreshadowings of the event; others claimed that they had received certain signals from, or even experienced actual encounters with, their deceased loved ones. Now Bonnie McEneaney, whose husband, Eamon, was a 9/11 victim, has collected numerous such anecdotal accounts. Her book, *Messages: Signs, Visits, and Premonitions from Loved Ones Lost on 9/11* (2010), bears a jacket blurb from spiritualist medium James Van Praagh. The evidence is revealing—if not in the way McEneaney intended.


“A JOURNEY OF LOVE, IN WHICH YOUR SOUL WILL FOREVER BE TRANSFORMED.”
—JAMES VAN PRAAGH
MESSAGES
Signs, Visits and Premonitions from Loved Ones Lost on 9/11
BONNIE McENEANEY

Background

At a quarter of a mile high, only eighty-six feet shorter than the Sears Tower in Chicago, the Twin Towers of Manhattan’s World Trade Center were the second- and third-tallest buildings in the United States. One steel tower was crowned with a restaurant; the other with an observatory. Far below, beneath the multi-building complex at the towers’ bases, was a giant basement containing a five-level garage capable of parking two thousand vehicles. The World Trade Center was a huge target for terrorists. Indeed, more than eight and a half years before the towers were brought down, the garage was the site of a massive bombing that rocked the towers, led to an intense investigation by the FBI and the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF), and culminated in the arrest and conviction of four terrorists, each sentenced to 240 years in the U.S. penitentiary (Nickell and Fischer 1999, 237–45).

The horrific events now known as “9/11” occurred on September 11, 2001. Nineteen al-Qaeda terrorists commandeered four commercial airplanes, crashing one into each of the World Trade Center’s Twin Towers and another into the Pentagon near Washington, DC; only the heroic actions of passengers and crew aboard a fourth hijacked plane prevented it from reaching another target—probably the U.S. Capitol—and instead caused it to crash in a rural Pennsylvania field.

The attacks prompted an immediate investigation by the FBI, which linked the strikes to the terrorist organization al-Qaeda and its leader, Osama bin Laden (who initially denied involvement). On July 22, 2002, the National Commission on Terrorist Attacks Upon the United States issued its report, which gave an account of the circumstances that surrounded the suicide attacks—including issues of preparedness and response.

The United States Department of Commerce’s National Institute of Standards and Technology (NIST) con-

ducted a technical investigation of the Twin Towers' collapse, culminating in a 10,000-page report explaining that the crashed planes caused severe initial damage and that the subsequent fires weakened the floors' support trusses, causing floors to sag and pull on the exterior steel columns, which then buckled and became unable to support the structures (Dunbar and Reagan 2006). As it happens, I was invited to lecture on critical thinking at NIST on June 28, 2007, and I was able to view some of the steel girders from the collapsed Twin Towers that had been analyzed by NIST experts (see figure 1). (In 2002, I had visited the "Ground Zero" site where the towers had stood.)

In time, however, conspiracy theorists began to make outlandish claims—some based on "scientific" evidence—that the towers' collapse was due not to airplane-crash damage and fire but to explosives previously installed in the buildings! Supposedly the U.S. Government intended to frame terrorists and so gain an excuse to launch the Iraq War (Griffin 2007, 2).

Meanwhile, the United States has responded to the 9/11 attacks by launching the War on Terror, beginning with the invasion of Afghanistan (whose Taliban rulers had harbored Osama bin Laden and his al-Qaeda followers) and enacting the USA PATRIOT (Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism) Act, which expanded both anti-terrorism legislation and law-enforcement powers. Osama bin Laden has been caught and killed, an architect of the terrorist attacks, Khalid Sheikh Mohammad, and other coconspirators have been apprehended, repair of the Pentagon has been completed, rebuilding has begun at the World Trade Center site, and various memorials to the dead have been created.

Signs

It is not surprising that controversies and irreparable damages remain, among them the effects of the loss of so many victims. Although surviving family members and friends have tried to get on with their lives, much grief and longing remains—and the lure of superstition is not far away. Hence the quest for "messages" from the dead and the likelihood of a book such as Bonnie McEneaney's *Messages* appearing.

McEneaney gives a personal example of one of the myriad "signs" that supposedly indicates contact with victims. Seeking some such indicator regarding her husband, Eamon, she writes, "Everything around me was still—not a ripple in the air. Then all of [a] sudden, somewhere above me, I heard the beginning rush of a gust of new wind building up in intensity" (McEneaney 2010, 10). As she looked up, "I could see the wind! It created such a pattern through the leaves and the trees that it was easy to follow. It had the outline of a river." She concludes, "I didn't know how to explain the river of wind I had just seen and felt.... Yet I knew absolutely it was connected to Eamon and that the sad message it brought was true and real."

This seems a classic case of wishful thinking and the power of expectation. McEneaney reveals (2010, 11) that her father had twice promised, before his own death in 1993, "You know, Bonnie, when I die, I'll speak to you through the wind." Thus she was predisposed to accept wind as a form of spirit communication, and when she witnessed a particular breeze after her husband's death, she interpreted it accordingly. Those looking for a sign are likely to find something they can interpret as such. Some pored over the things their loved ones left behind and selectively mined them for signs, engaging in a process of after-the-fact matching known as retrofitting.

Many of the supposed signs cata-

Figure 1. Steel girders from the collapsed WTC Twin Towers that have been analyzed by NIST experts. (Photo by Joe Nickell.)

logued by McEneaney seem truly mundane: finding a coin (25–32, 195), having an experience with a bird or butterfly (25, 28, 158), seeing a rainbow over the place where the World Trade Center once stood (134), and so on. A color photo that graces the back cover of *Messages* was taken by a woman whose husband died in the South Tower on 9/11. It shows their daughter with a streak that she interprets as a "beam of light" (4) but is probably only an effect caused by the intrusion of her camera strap. (As is typical of photographic glitches, nothing was seen until the photo was processed.) Over and over, McEneaney and those whose stories she features emphasize that an occurrence is "something that we can't explain" (e.g., 117), as if therefore it is proof of the paranormal. This is a type of logical fallacy called arguing from ignorance. ("We don't know what actually happened, so it must've been paranormal." In other words, "we don't know; therefore we do know!")

Visits

Supposed visitations by the deceased 9/11 victims are among the most profound experiences described in *Messages* and are also among the most easily explained. Consider the seeming visit of victim Welles Crowther to a former roommate who stated: "I don't remember if it was one or two days after 9/11. I don't know if I fell asleep or not. But what I remember clearly is Welles standing in the doorway to my bedroom, saying, 'Hey, man, everything's going to be all right.' He was there just a second and then he said, 'I've got to go now'" (97). Another seeming visitation was reported by Deborah Calandrillo, whose husband, Joe, had worked as an accountant in the North Tower. "He appeared suddenly in the bedroom they had shared," writes McEneaney (2010, 51). "She was lying in bed. His arm was draped around her pillow. There was a solemn expression on his face. Deborah told me that she is positive she was awake when this happened."

That insistence on having been awake helps identify the experience as a common "waking dream," which occurs in the interface between being awake and asleep. This is the explanation for many paranormal encounters through the ages: visits from demons, ghosts, aliens. Along with ordinary dreams, events that are surely waking dreams are reported frequently in *Messages* (56–59, 101).

A rather typical waking dream was described by another friend of Welles Crowther, who—while lying on the sofa watching television (and having possibly drifted toward sleep)—heard footsteps and saw his late friend, who said, "Chuck, it's okay. I'm okay." Like most people who experience a waking dream, he thought he was not dreaming:

> First of all I don't dream very much. When I do, my dreams aren't realistic. If this was in fact a dream, it was completely realistic. I was wearing exactly what I was wearing; the television was playing exactly what it was playing. Everything was exactly as it is, and there was no break between sleeping and waking . . . between what happened and what was going on around me. It was of a piece.

He also said: "I don't remember what happened next. I don't remember if I blinked or if he just went away" (101). This case illustrates many of the characteristics of a waking dream, wherein, as the late psychologist Robert A. Baker noted, the experiencer "is unalterably convinced of the 'reality' of the entire experience." Baker also called attention to the fact that after the supposed encounter, the percipient typically just goes back to sleep (Baker and Nickell 1992, 130–131, 226–227).

Some percipients, like Lisa O'Brien, whose husband, Timmy, was a 9/11 casualty, appear to have had both dreams and waking dreams. "Lisa feels that Timmy is frequently in her bedroom," states McEneaney, "communicating with her in the night, sometimes when she is asleep and dreaming and sometimes just as she drifts off" (67).[1] Not surprisingly, Lisa's experiences have occurred only at night; "she has never actually seen Timmy when she is wide awake and moving about" (68). (When people claim to encounter spirits during waking activity, it is usually when they are tired, performing routine work, concentrating on some activity such as reading, or in an altered state of consciousness such as daydreaming. [Nickell 2001].)

Children also often have ghostly experiences just like adults. Lisa's little daughter Jacie once told her: "Daddy is here too. He comes in the middle of the night and sits at the bottom of the bed. Sometimes he pats your hair and kisses you" (69). Such experiences typically express the percipient's own hopes and fears: the desire for a comforting message from a deceased loved one or the fear of an encounter with an extraterrestrial.

Jacie, at age four, was also seen at times to laugh and appear "to have conversations with invisible companions." She said they were her daddy and his friends from work. Having invisible companions is common to those with a propensity to fantasize (Wilson and Barber 1983) and is not, of course, proof of spirit communication—no matter how often the former is equated with the latter.

Premonitions

McEneaney begins her discussion of premonitions by relating a premonitory dream experienced by Abraham Lincoln, who "told several people about his dream, and he also wrote it down in his journal" (119). Lincoln described seeing a corpse upon a catafalque, around which were military guardsmen and many mourners: "'Who is dead in the White House?' I demanded of one of the soldiers. 'The President,' was his answer. 'He was killed by an assassin.' Then came a loud burst of grief from the crowd which awoke me from my dream. I slept no more that night and although it was only a dream, I have been strangely annoyed by it ever since."

Now, putting aside the fact that McEneaney's text is corrupted (differing from the original in some of its punctuation and containing—horrors!—a grammatical error) and given that Lincoln did not keep (as she reports) a journal, he probably did relate such a dream. However, he thought at

It is really not surprising that World Trade Center workers and their family members had forebodings of disaster. The towers had already been the target of a most serious attack in 1993.

the time that it was someone else who was killed, as he told Ward Hill Lamon, a friend who had accompanied him to Washington for his protection (Nickell 1999, 17). It was Lamon who, from memory, reconstructed Lincoln's words some three decades after the fact (Lamon 1895, 115–17).

The important point to make is that there is nothing remarkable about Lincoln having dreamed of death—even his own assassination. In the Civil War strife, death was all around him. Moreover, not only had an assassination plot been thwarted prior to his first inauguration in 1861, he had subsequently received numerous death threats and once had a hole shot through his top hat by an intended assassin. Lamon and others around him constantly remonstrated with him about his safety.

Likewise, it is really not surprising that World Trade Center workers and their family members had forebodings of disaster. The towers had already been the target of a most serious attack in 1993. Osama bin Laden had issued *fatwas* in 1996 and 1998 calling for *jihad* (holy war) against the United States. And the WTC workers had not just the same unease as everyone has about their unforeseen future (even in the most peaceful times); they were working in what was proven to have previously been a prime terrorist target. As Martin Gardner wrote (concerning supposedly precognitive dreams of the sinking of the *Titanic*), "with respect to dreams about major disasters that make the headlines, we have no inkling of the millions and millions of times that people dream of such a disaster and nothing happens" (Gardner 1986, 9). Not only will some people be motivated for various reasons to exaggerate or even fabricate such a dream (for personal aggrandizement, for example, or to promote supernatural beliefs), but even a completely honest person may unconsciously exaggerate. Gardner explains:

> After telling about a precognitive dream for the umpteenth time, one no longer recalls the dream's actual details, especially if it occurred many years ago. Dreams are hard enough to remember accurately ten minutes after waking! One is soon recalling not the dream itself but pictures that formed in the mind during previous tellings. The only way a precognitive disaster dream can have evidential value is when its details are written down before a disaster and dated in a way that can be verified, such as being described in a letter or published before the event or stated on a radio or television talk-show.

(In at least one instance—a prediction of the assassination attempt on President Reagan—even that was faked by a later, backdated taping [Frazier and Randi 1981]!)

So the after-the-fact stories McEneaney relates are simply not impressive. Take that of a woman who formerly worked in the South Tower who dreamed she was looking at "the southern tip of Manhattan" (i.e., in the direction of the WTC) when she beheld "a huge explosion" and "saw something that looked almost like a mushroom cloud over the city." In the dream, she said to her husband, "Bin Laden just blew up New York. Grab the dogs and get them away from the windows in case they shatter" (qtd. in McEneaney 2010, 132). Another woman, known as "Julia C.," says she had a dream just two days before 9/11 concerning a previous country home: suddenly a big truck raced up the driveway and disappeared into the house, whereupon she saw "this huge gaping black hole with jagged edges" then "a flicker of a fire and black smoke"—images of a truck bombing she later equated with the destruction of the Twin Towers by crashing planes (135).

As still another example, one victim's dream journal contained a reference to an "atom bomb" that was "in the shape of a paper plane," but if that seemed significant in light of 9/11 (it was the last entry, made a month before the tragedy), it appears less so when we note that the 9/11 disaster did not involve an "atom bomb" and that, in any case, the journal's dream bomb "did not go off." Actually, the woman's dream occurred the day after she was hired to work at the World Trade Center (McEneaney 2010, 143) and may simply have been prompted by the previous bombing there. It is simply retrofitting to so selectively equate dream images with the 9/11 events. This is what yet another person (with only a late connection to the WTC site) obviously did. She had had a dream of "two predatory birds"; however, McEneaney (2010, 139) states: "It wasn't until later" that she "came to see the birds as lethal aircraft."

Mediumistic Offerings

Following the WTC disaster, before the month was out some family members had begun to visit so-called psychics and mediums (those who supposedly intercede on our behalf to relay messages from the spirit realm). Unlike the "physical mediumship" of the past—when spirits seemed to actually materialize or produce distinctive effects in dark-room séances, practices that repeatedly proved fraudulent—today's "mental mediumship" carries fewer risks of exposure. At the same time, the dead often seem uncertain, or perhaps they mumble, as when McEneaney herself received mention of a man whose "name was John or

began with the initial *J*" (201). Not surprisingly, her husband indeed had a friend of that name. If not, a Jim or Jason or Jesse or another would have filled the bill.

McEneaney was really impressed with the psychic offering, "Your husband's name starts with *E*. Is it Emile?" (200). The fact is, his name was Eamon—yet McEneaney is willing to credit the reader with a hit. She wonders how a psychic could have gotten so close by identifying the first letter. Perhaps it was a lucky guess; perhaps McEneaney remembers exactly what was said and when. Or perhaps a friend of hers, who had apparently been to the psychic and recommended her to McEneaney, had mentioned her (and her husband's name) to the psychic—something the friend might not even remember having done.

McEneaney appears woefully unaware of psychics' techniques. Consider cold reading (so called because the psychic works "cold," without advance knowledge about the sitter). It is a method of artfully fishing for information while giving the impression that it comes from spirits of the dead. Often the reader uses what I call "the question trick": he or she asks a question that, if answered in the affirmative, is considered a hit, whereas otherwise the psychic will treat it as only part of the lead-up to a statement or to additional questions. Using body language, the sitter's own responses, and other cues and clues, the shrewd medium operates like a skilled magician but employs instead of legerdemain what might be call "sleight of tongue."

Such readings work better with the credulous, who often count only hits, while misses are either interpreted as necessary (retrofitting again) or forgotten. McEneaney does concede "that not everyone who received a message from a medium or psychic was happy with the experience" (202). One psychic told a woman that "in another life," her husband and son (both of whom had perished at the WTC) "liked to go out in a bang and they were together when Mount Vesuvius blew up." The woman found such offerings neither helpful nor comforting (202).

The same woman, however, was more impressed with the clever, fast-talking "psychic medium" John Edward (real name John Edward McGee Jr.). Yet he had mentioned not a husband and son but a husband and father-in-law (apparently the latter was also deceased). Edward fared much better when he told her that she was "wearing a piece of clothing that had belonged to her husband," which she was (203). That seems quite accurate, but suppose he had actually asked if she had with her something of her husband's (which would perhaps be more likely than not) and the woman retrofitted the more specific "clothing" to the "something." It is difficult to judge the accuracy of such claims without complete and precise facts.

Edward uses a number of techniques, including a shotgun approach: a statement to an area of the audience rather than a single person, whereby he has multiple opportunities for someone to validate one of his offerings. He has also been known to use the technique of hot reading, passing off information *gleaned earlier* as having just come from the Other Side. He was caught cheating in this way on a Dateline NBC episode (for which I was both an advisor behind the scenes and an interviewee on camera [Nickell 2010]). If Edward or any other medium could actually communicate with the dead under scientifically controlled conditions, he or she could accept James Randi's Million Dollar Challenge, retire, and enjoy the accolades of science.

Conclusions

Given the overwhelming tragedy of 9/11, made very personal to those whose loved ones perished, we can well understand the emotions involved: the grief, the longing for a connection with the deceased, the wish for a final goodbye. Perceived signs, apparent visits, premonitions, or even pretended messages supposedly relayed by psychics and mediums may seem comforting—but at what expense? Such illusions come at least at the cost of sinking into superstition, at worst of falling vulnerable to fantasizers or charlatans. Sadly, this is the legacy of McEneaney's *Messages*.

Acknowledgments

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Note

1. There are two types of waking dreams: the hypnagogic experience, in which one is going to sleep, and the hypnopompic experience, in which one is waking up. Sometimes the person is unable to move—experiencing what is called sleep paralysis—because the body is still in the sleep mode. (See Baker and Nickell 1992, 130–31.)

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Deliberate Ignorance

KEITH TAYLOR

Perhaps fearful that even a small amount of knowledge is a dangerous thing, many Americans hold it in disdain. Yet the same people accept ridiculous claims as long as the claims support ideas they believe in or want to hear. And legislators know what that is. Turn on C-SPAN, and the chances are good that you'll see a member of Congress leading a blind charge into the land of make-believe.

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Some time back, a U.S. senator who denies human-caused global warming invited a science-fiction author—not a scientist, and certainly not a climatologist—to testify about climate change. Then, having heard from the science-fiction author what he wanted to hear, the senator joined the author in declaring that scientists' concern over the looming disaster was a myth. That year was the hottest on record. So was the next, and so was the next. The pattern continues, but—thanks in part to the senator—the myth about the myth persists.

Science is sometimes touted by legislators, but only if it reflects what the legislator thinks the majority of his or her constituents wants to hear. One representative from the Midwest regularly holds forth on the virtues of ethanol in protecting us from the climate change he doesn't believe in. I've never heard him own up to the scientifically tested and vetted fact that ethanol made from corn or soybeans gives us a net increase of CO_2 in the atmosphere while decreasing the world food supply.

Deliberate ignorance, along with jingoism and dogmatic stubbornness, shapes too much of America's intellect. During the Cold War, we simply would not be beat by the Soviet Union, even in regard to the paranormal. In the late 1960s, our intelligence services suspected that Soviets were keeping tabs on us via remote viewing. Not to be outdone, the U.S. Army set up a program headed by the Stanford Research Institute (which had no direct connection to the university). By 1985, no useful information had been gleaned by folks sitting around thinking really hard, so the Army ceased funding it. But when an idea—no matter how scientifically baseless—gets the attention of Congress, its life is extended and the money keeps coming in.

Operation Stargate, as the U.S.'s remote-viewing project was sometimes called, was kept alive. It only cost $20

million and had some interesting results that couldn't be denied—because they were never tested. In 1996, the Science Applications International Corp, a San Diego-based think tank, conducted some Operation Stargate experiments. When I checked on this organization for a story, the people I talked with admitted they participated in the program but told me all the results were classified. I called the FBI, and a public relations representative also told me told he couldn't comment on the project because it was classified.

The best information I could get was from a less reticent source: the grapevine. There I "learned" that one remote viewer got a peek inside a Russian submarine but wasn't able to see anything classified. Nor was she able to determine which ocean the U-boat was in, but it was *somewhere*! As a retired Navy cryptologist, I was amazed at the ability of an outfit to spend so much money for information that could be gleaned by just thinking.

Thomas Jefferson warned us, "An enlightened citizenry is indispensable for the proper functioning of a republic." You have to wonder what Jefferson would have to say about the citizenry that elected today's leaders.

Where do we get our wacko ideas? Try the Internet. The brightest scholars in history would have envied today's Americans, who have so much valid scientific information available to them. Yet today's Americans also believe what they want to believe—verification be damned!

Then they vote.

Is there hope for stemming this tide of deliberate ignorance? Not in Texas, it seems. Last May, the Texas State Board of Education adopted a social studies and history curriculum that undermines much of what we know about science and our past. Jefferson, who worried about such credulity, had his historical role downplayed—perhaps to make room for Jefferson Davis, the slave-owning president of the Confederacy.

Because Texas is one of the largest buyers of textbooks—and is therefore very influential regarding what textbooks are sold nationwide—such dangerous ideas will be taught as fact to children across our nation. Pious Texans want us to understand that we were founded as a Christian nation, which might have surprised many of its founders. John Adams signed the Treaty of Tripoli, which emphatically designated America as in no sense a Christian nation. That treaty was ratified unanimously by the Senate and has never been withdrawn.

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Today America is galloping blithely down the road to blind faith in nonsense. Such uncritical thinking is supported by those who want their next quarter's interest protected whether an interminably long summer bodes ill for our grandchildren or not.

We hear the phrase "scientists don't know everything" so often that it ought to be a red flag for every skeptic. We who believe in science are also dismissed with the canard that we are merely eccentric. After all, deliberate ignorance works wonders for the deliberately ignorant. To those of us who want our history untainted and scientific findings tested, deliberate ignorance is a disaster.

Can this disaster be averted? Sure, but it will take a massive effort backed by a knowledgeable populace. Will it be averted? Probably not—unless more of the populace starts looking for real answers, which won't be easy in the face of such a relentless barrage of sophistic answers from deniers of hard facts. The last refuge for deniers of hard facts is religion; every congressman except Pete Stark of Oakland claims a belief in a supreme being.

I hate to be contrary, but was anybody other than I frightened when three viable candidates at a political debate of would-be presidents admitted that they do not believe in evolution? And how different are these candidates from those who grudgingly admit they believe in the most tested scientific theory of all time but refuse to openly endorse it?

Science can't compete with charisma except in the real world.

And don't forget the money! A recent headline in the *San Diego Union-Tribune* blared: "Oil Billionaires Backing Prop. 23"—an effort to thwart an earlier law designed to fight global warming. Yup, and that included a million dollars from Koch Industries, ranked by *Forbes* as the second-largest private company in the United States. It is also among the top ten polluters. I'm proud to say my state rejected the self-serving proposition.

We're in a world of hurt here folks, and you can take that from a very worried but eccentric curmudgeon.

The 2012 Doomsday Hoax: Update II

DAVID MORRISON

The 2012 doomsday hysteria I have written about twice before in SI ("The Myth of Nibiru and the End of of the World in 2012," September/October 2008, and "Update on the Nibiru 2012 Doomsday," November/December 2009) has not declined. As 2012 approaches, I still receive several questions per day sent to "Ask an Astrobiologist," including questions from people who think the world will end and from children who say they are contemplating suicide. Here are three answers about the 2012 hoax that I have written recently for the "Ask an Astrobiologist" column on NASA's website.

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Nibiru Is Not Real

Many people believe in the existence of Nibiru (or Planet X) in spite of the absence of evidence that it exists today or that it was a planet observed by the ancient Sumerians. The burden of proof should lie with those who claim there is a planet (or a brown dwarf) on a 3,600-year orbit that passes through our inner solar system and will approach Earth in 2012. These claimants have failed to provide any such credible evidence. But we can take the initiative and provide five facts to prove that Nibiru does not exist:

1. Any planet that passed frequently through the inner solar system would disturb the orbits of the inner planets. If such an intruder existed, our Moon would have been stripped away, and the orbits of Venus and Earth would have become highly elliptical. The current orbits of the Moon and planets provide strong proof that no large object has penetrated the inner solar system for millions of years.

2. Any large object in the solar system—even out as far out as Neptune or Pluto—would have been seen in numerous telescopic surveys, such as those that are discovering thousands of new asteroids and Kuiper Belt objects every year. These surveys have not found Nibiru because it is not there.

3. NASA's space-based infrared surveys, such as the recent WISE (Wide-field Infrared Survey Explorer) mission, are even more sensitive than optical surveys for finding objects in the outer solar system. None of these infrared surveys has found Nibiru. If Nibiru ex-

isted, it could easily have been picked up by its infrared emission at any time in the past several decades.

4. If Nibiru were just months from its closest approach to Earth in 2012, it would already be well inside the orbit of Jupiter and visible to the naked eye from all over the world. Even if it were an unusually small or dark planet, it would be seen and tracked by tens of thousands of professional and amateur astronomers.

5. Any planetary mass approaching the inner solar system would perturb other planets due to its gravitational attraction. Astronomers would already be seeing changes in the orbits of Mars and Earth. There have been no such changes detected. Nibiru, like all of the fears about 2012, is a hoax.

Solar Activity Is Cyclical and Not Disastrous

The Sun is not our enemy and will not hurt us. There is increasing public concern over solar outbursts (flares or coronal mass ejections [CMEs]). One source of this fear is the science-fiction disaster film *2012*, in which some sort of solar outburst "destabilizes the core of the Earth" and leads to the destruction of the planet. Luckily, most people have the good sense not to look to Hollywood plots for science information. The truth is that the Sun goes through an eleven-year activity cycle. Near peak activity, there are solar flares and CMEs that can cause some damage to space satellites, although engineers have learned to design electronics to withstand such events. Such outbursts could also be a problem for astronauts in space beyond Earth's magnetosphere, but humans have not ventured into deep space since the end of the Apollo program in 1973. We don't expect peak solar activity until well into 2013, although the Sun is never entirely predictable. NASA has never suggested that the solar maxi-

mum could bring death or disaster.

For several years around the peak of the solar activity cycle there will be many solar flares, but there are no specific predictions. The Sun was unusually quiet for the three years from 2007 through 2009, and scientists now predict that the next maximum, sometime in 2013, will probably be unusually weak. Statements that this cycle will be unusually strong or that NASA has underestimated the level of solar activity by a factor of twenty are false.

In describing solar activity, use of such phrases as "solar tsunami" or "solar storm" is unfortunate. It makes people think of destructive tidal waves or storms on Earth—but the Sun is 150 million kilometers away!

In describing solar activity, use of such phrases as "solar tsunami" or "solar storm" is unfortunate. It makes people think of destructive tidal waves or storms on Earth—but the Sun is 150 million kilometers away! There is an especially confusing Fox News interview with cosmologist Michio Kaku that is popular on YouTube. Kaku states that at solar maximum the Sun's magnetic field suddenly flips and a giant shock wave of radiation heads for Earth, which he warns could disable our civilization. This is not the way the solar cycle works, and it raises unwarranted fears. Remember, if our civilization survived previous solar maxima in 1990, 2001, and earlier, we will also survive the next one in 2013.

As a precautionary measure, NASA runs a study called Solar Shield at its Goddard Space Flight Center. The study's purpose is to use a combination of Earth-based and space-based observations of the Sun and the solar wind to provide several hours of warning about incoming particles from CMEs. This system is still in the testing phase, but it could allow utility companies that control power grids to take preventative measures, such as shutting down key transformers at the time the charged particles arrive.

Most of the dangers that some people associate with flares or other forms of solar activity are not real. Solar activity cannot cause forest fires, such as the summer 2010 fires in Russia or the September 2010 fires in Colorado. The main reason Colorado had such severe fires was the widespread killing of trees by a beetle, which is in turn related to global warming. Dead and dying trees burn much more easily than healthy forests. The fires in Russia were also related to climate: they were associated with one of the hottest and driest summers in history. I find it distressing that some people are becoming afraid of the Sun, just as many are already afraid of black holes or comets or cosmic alignments. This is apparently a revival of astrological superstition that should have died out generations ago.

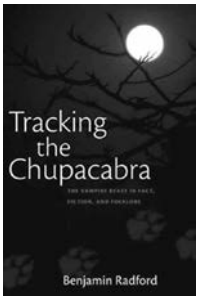
2012 Doomsday Predictions Are All Wrong

There is no evidence that anything bad will happen in 2012—certainly not a "doomsday" on December 21. The people who promote the 2012 hoax are doing a great deal of harm by frightening people. They are doing it to make money or maybe to make themselves feel important. With just two years to go, not one of the doomsday predictions has come true. Nibiru, which according to claimants was supposed to be visible to the naked eye starting in the spring of 2009, was a no-show. None of the more than one hundred thousand professional and amateur astronomers around the world has seen Nibiru or Planet X. There has been no change in the orbit of the Earth, and the many predictions of changes in the tilt of our rotation axis did not come true either. Nor has there been any change in the orbit or rotation of any other planet.

The Earth's magnetic field has not changed, and we are not headed for a magnetic pole reversal in 2012. Your compasses still point north as they always have. Earthquakes and volcanic eruptions are no more frequent than is normal. Solar activity, which the doomsayers claimed would reach an intense peak in 2012, has been low and probably will not peak until 2013. No asteroids have been discovered on a collision course with Earth. Governments are not building shelters or bunkers or doing anything else to prepare for a danger that simply does not exist. Every doomsday prediction has turned out to be wrong. Yet many people are still frightened. It is very sad, but I am afraid that this nonsense will persist right up until December 21, 2012. ■

A Slam-Dunk Debunk

MATT CROWLEY



Tracking the Chupacabra: The Vampire Beast in Fact, Fiction, and Folklore
By Benjamin Radford. University of New Mexico Press, Albuquerque, 2011. ISBN: 978-0-82635-015-2. 202 pp. Softcover, $24.95.

Benjamin Radford is a longtime scientific investigator of fringe-science topics with an emphasis on cryptozoology. The University of New Mexico Press has published Radford's latest book, *Tracking the Chupacabra: The Vampire Beast in Fact, Fiction, and Folklore*. Though modestly titled, this book is arguably the greatest cryptozoological book ever written. It's a winner in every way, a slam-dunk debunk of the mystery surrounding the new monster on the block: *el chupacabra*.

Radford builds his case methodically, starting off with a history of vampire legends in general. After all, *chupacabra* literally means "goat sucker" in Spanish and as such falls squarely within the realm of vampiric tradition. Many people become familiar with vampires through popular media such as books or movies. In America, the emphasis is on European or American monsters. Yet Radford demonstrates that vampiric legend is a worldwide phenomenon that goes far back in history. Not surprisingly, each culture has a slightly different spin on the legend, and the culture of Puerto Rico, where the first *chupacabra* reports originated, is no exception.

The Puerto Rican version of the *chupacabra* legend incorporates elements of anti-American sentiment as well as conspiracy theories and religious "end times" notions. The *chupacabra* myth sprang up to explain dead animals left behind that had been killed (and supposedly left bloodless) by unknown predators. Radford methodically investigates how these animals probably died.

There's an entire branch of science, taphonomy, that deals with what happens to animals after they die. Radford's account is both accessible to the lay reader and sparing in unnecessary gore; all photos are in black and white. A near-reprise of the cattle mutilation flap of the 1970s, virtually all cases of alleged *chupacabra* attacks involve animals dying by ordinary predation, not by having their blood sucked. Using both photographs and drawings, Radford illustrates how an untrained individual might come to misinterpret an animal's death as the result of a blood-sucking beast.

Sometimes asking a simple question leads to a surprising result. By the time the *chupacabra* legend went north to the United States, the beast had changed from a bipedal being with spikes down its back to a quadruped, something along the lines of a dog, wolf, or coyote. These animals are all *canids*, and as such have certain familial characteristics. Radford works through a very simple, non-intuitive question: Is a *canid* even physiologically capable of sucking blood from an animal's wound?

The technology behind DNA analysis has progressed so quickly during the beginning of the twenty-first century that it's not surprising that it has been used to identify the carcasses of animals claimed to be *chupacabras*. Without fail, DNA analyses of these animals have shown them to be known species or, occasionally, hybrids of known species. In many cases the carcasses are hairless, or nearly so. Radford includes a treatment of the nature of sarcoptic mange, which can cause an animal to lose most if not all of its fur. Hairless canids often look very different from normal, healthy animals.

The real death blow to the *chupacabra* legend was Radford tracking down and personally interviewing the first known *chupacabra* eyewitness, a Puerto Rican woman named Madelyne Tolentino. To borrow a term from epidemiology, Tolentino was "patient zero," i.e., the single person from whom the tale originated and spread. This is the point at which everything falls into place, giving Radford's investigation an almost Euclidian elegance. A careful examination of Tolentino's account demonstrates virtually beyond a doubt that her sighting was a confabulation with a work of fiction.

As with a geometric theorem, the elegance lies in the *process* of the proof, not just the result. Radford freely admits that it may seem like overkill to put so much time and energy into debunking an intrinsically unlikely monster. Yet the beauty of Radford's book is that we get to watch *how things ought to be done*. The investigative process is as important as the ultimate conclusion. Radford's book is a must-have in any good crypto-library.

Matt Crowley earned a bachelor of science degree in pharmacy in 1987 from the University of Montana. He has given presentations at several Bigfoot conferences on the subject of "Dermal Ridges and Casting Artifacts." He currently lives in Seattle, Washington.

Listing does not preclude future review.

BELIEVING BULLSHIT: How Not to Get Sucked into an Intellectual Black Hole. Stephen Law. Prometheus Books, Amherst, New York, 2011. 271 pp. Softcover, $19. How do ridiculous views get entrenched in the minds of sane, intelligent, college-educated people? U.K. philosopher Stephen Law identifies eight key mechanisms that can suck people into belief systems like light unable to escape a black hole. He devotes a chapter to each: "Playing the Mystery Card"; "'But It Fits!' and the Blunderbuss"; "Going Nuclear"; "Moving the Semantic Goalposts"; "'I Just Know!'"; "Pseudoprofundity"; "Piling Up Anecdotes"; and "Pressing Your Buttons." (To be reviewed in our next issue.) —K.F.

THE FACT OF EVOLUTION. Cameron M. Smith. Prometheus Books, Amherst, New York, 2011. 250 pp. Softcover, $18. This is a welcome and highly readable book by an anthropologist (Portland State University) and writer (coauthor of *The Top Ten Myths about Evolution*). Smith shows not only that evolution *does* happen but that it *must* happen. Evolution is the natural consequence of three independent facts of the natural world: 1) the fact of the replication of life forms (producing offspring); 2) the fact that the offspring are not identical (variation); and 3) the fact that not all offspring survive (selection). Viewed in these terms, evolution is simply the inevitable consequence of these three obvious, observable natural phenomena. Smith also covers new discoveries of the past twenty years, during which the genomic revolution has strengthened Darwin's basic ideas and produced abundant new evidence of evolution in action. A final chapter, "The Grand Illusion," discusses how humans are conditioned to think that complex things, like plants and humans, can be the result of only intentional *making* rather than the consequence of natural phenomena. This accounts for much of the misunderstanding and rejection of evolution among the public. —K.F.

THE GLOBAL GRAPEVINE: Why Rumors of Terrorism, Immigration, and Trade Matter. Gary Alan Fine and Bill Ellis. Oxford University Press, New York, 2010. 252 pp. Hardcover, $27.95. *The Global Grapevine*, a new book by folklorists Gary Alan Fine (John Evans Professor of Sociology at Northwestern University) and Bill Ellis

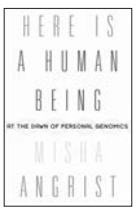
Personal Genomics: The Fine Line between Science and Narcissism

MASSIMO PIGLIUCCI

The Human Genome Project began in 1990 with much fanfare. We were promised the essence of a human being served on a CD, with the implication that we would gain a much better understanding of what it is to be human—and also cure cancer and a bunch of other nasty diseases. None of that has happened. The project was completed in 2003 at a cost of $2.7 billion (1991); cancer is still here, and we haven't acquired much more insight into the essence of humanity.

Of course, there have been benefits, from the development of new sequencing technologies (so that more genomes, including those of many other species, can be sequenced) to some patenting of new genetic screening tests for Alzheimer's and certain types of cancer. But it is fair to say that the broader scientific community and the public at large were substantially oversold on the import of the project—particularly its practical applications.

Now, as former doctoral and postdoctoral student in human genetics and former genetic counselor Misha Angrist tells us, we are about to step into the era of personal genomics. And once again, we are being promised cures for all sorts of human ailments as well as, to paraphrase the title of the book, a hard-science view of what it is to be human. As in the case of the original project, I have no doubt that personal genomics will result in some, perhaps even several, health and scientific benefits. But reading Angrist's book did not exactly make me a fan of the idea—despite the fact that the author clearly is.



Here Is a Human Being: At the Dawn of Personal Genomics
By Misha Angrist.
HarperCoillins,
New York, 2010.
ISBN: 978-0-06162-833-7.
352 pp. Hardcover, $26.99.

Largely, the book is (unintentionally, I'm sure) about the incredible amount of narcissism characterizing most of the people involved in various aspects of the new quest for personal

It is fair to say that the broader scientific community and the public at large were substantially oversold on the import of the project.

genomics, from scientific luminaries-turned-embarrassments like James Watson to people (including Angrist himself) volunteering for the Harvard-sponsored Personal Genome Project. It's a tale of good science mixed with a dangerously careless attitude about personal privacy, to which of course one must add quite a bit of private financial interest on behalf of a number of startup companies that stand to profit handsomely if they can convince us (and our doctors, who typically know little of genetics) that we really ought to be able to read our annotated genomes online (or maybe on an iPhone app).

Angrist discovered, for instance, that "I was seven times more likely to go bald than most men. Duh. I needed only to look in the mirror to confirm that..."

Angrist writes toward the end of the book: "After three years, I had done it: while I'd hardly conquered it, I had come and seen my genome, or at least some tiny fraction of it. . . . This journey of self-exploration had turned out to be more of a speculative intellectual exercise than a life-changing clinical one." And no wonder. Angrist discovered, for instance, that "I was seven times more likely to go bald than most men. Duh. I needed only to look in the mirror to confirm that. I had plenty of [genomic] risk factors for coronary artery disease, type 2 diabetes, stroke, obesity. Again, duh. I had had a grandparent on each side die before age sixty from a heart attack. My dad had had a quadruple bypass when he was sixty."

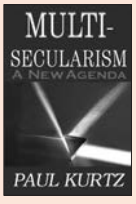
In the course of his quest, Angrist discovered many more largely useless but highly scientific facts about his health: his risk of colon cancer is 5 percent, which is probably not statistically different from the population average of 6 percent; he has almost twice the population's risk of Graves' disease, an autoimmune condition caused by a hyperactive thyroid. But there is nothing he can do about it because the condition is currently incurable, and he shouldn't worry too much about it anyway because his actual chances of getting it are only 0.93 percent (free advice: never trust two-digit precision after the decimal point in this sort of data). But if he is a normal human being, he will probably fret about anything for which his genomic profile deviates from the average (which, I imagine, is not likely to help his self-admitted propensity for depression), and his health insurance company will likely take advantage of even statistically insignificant deviations to save a buck at the cost of making his life more difficult.

I am certainly not advocating hardcore skepticism toward personal genomics; this isn't astrology or homeopathy. But it is precisely the sort of complex subject matter—at the interface of basic science, applied science, technology, business, informatics, and, last but certainly not least, ethics—that should have inspired an equally complex and nuanced book. Alas, *Here Is a Human Being* is not that book.

Massimo Pigliucci is professor of philosophy at the Graduate Center of the City University of New York, a fellow of the American Association for the Advancement of Science, and author of *Nonsense on Stilts: How to Tell Science from Bunk*. His essays can be found at www.rationallyspeaking.org.

(professor emeritus of English and American studies at Pennsylvania State University), deals with rumors and gossip. The authors argue that rumors are a valuable window into social and global anxieties and fears; indeed, "rumors let us talk as a community about some very inflammatory issues—issues that may be embarrassing or disturbing to discuss—allowing us to act as if we are talking about real events, not personal beliefs. We can air our hidden fears and desires without claiming these attitudes as our own." *The Global Grapevine* covers four major social themes that generate rumors: terrorism, immigration, international trade, and tourism. These rumors (often encompassing everything from anti-immigrant hostility to urban legends about organ theft) reflect social anxieties about contact with foreign cultures, and they can cause genuine harm and danger when acted upon. This book is a fascinating and indispensable guide to understanding the folkloric and cultural functions of rumors and myths. —B.R.

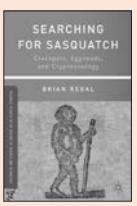
MULTI-SECULARISM: A New Agenda. Paul Kurtz. Transaction Publishers, New Brunswick, New Jeresy, 2010. 263 pp. Hardcover, $39.95. The philosopher Paul Kurtz, who has been intimately involved in the campaign for secularism and Enlightenment values throughout his career—and who founded the Committee for Skeptical Inquiry and the Center for Inquiry, among other institutions—here presents the case for secularism and the secular society, which he considers part of the battle for the open democratic society. It's a battle that has leaped to center stage worldwide; it is being contested or defended everywhere. The first principle of secularism was eloquently expressed in the First Amendment to the U.S. Constitution, which barred establishment of a religion and the prohibition of its free exercise. In Kurtz's view, multi-secularism recognizes that the forms secularism takes must be adapted to the unique socio-cultural traditions of each country or region. After introductory chapters on secularism in historical perspective and naturalism, sections deal with secular morality (asserting that morality is natural, affirming life, and encouraging the pursuit of excellence and good will toward others); secularism and religion (including republication of his fine 2004 article "Skeptical Inquiry and Religion" from the SKEPTICAL INQUIRER); humanism and politics; the rise of India and China; and some moving personal reflections, including "Final Reflections," written in 2007 when he was in



the hospital awaiting open-heart surgery and "perhaps facing death" (fortunately, he survived and is still writing). —K.F.

THE MYSTERY ANIMALS OF IRELAND. Gary Cunningham and Ronan Coghlan. CFZ Press, North Devon, Great Britain, 2010. 167 pp. Softcover, $17.99. The bulk of *Mystery Animals of Ireland* comprises lake-monster and sea-serpent sightings. Though some of the chapters could have used more depth in their discussions and analyses, the book surveys a broad range of subjects, including mysterious swine, sea serpents, werewolves, mermaids, hairy hominids, and big cats. The evidence for these creatures varies widely, and in most cases it is pretty thin. As is often the case, the bulk of evidence is reports and sightings. The book is informed by some actual research and investigation by its authors—a welcome rarity in the field. The authors were let down, however, by the book's production values. There are more typos than should be acceptable in any professional book, and the quality of the images ranges from mediocre to poor. With these limitations in mind, *The Mystery Animals of Ireland* is a worthwhile addition to the literature on mysterious Irish monsters and creatures specifically, with information that would be difficult or impossible for North American readers and researchers to obtain. —B.R.

SEARCHING FOR SASQUATCH: Crackpots, Eggheads, and Cryptozoology. Brian Regal. Palgrave Macmillan, New York, 2011. 250 pp. Hardcover, $85. Brian Regal, an assistant professor of the history of science at Kean University, has written a fascinating and well-researched book on those who have searched for Bigfoot. Bigfoot itself is barely mentioned and only peripherally discussed. The real value in the book lies in its insights into who searches for Bigfoot and why. For example, Regal notes that "for non-scientists, Bigfoot was tailor-made for aspiring cryptozoologists. The primary requirement for entering the hunt was simply a desire to do so." Furthermore, "depending on where one lived, enthusiasts wanting to take part in the adventure need only walk out their back doors to enter the world's largest anomalous primate laboratory. Unlike the amateur naturalists of the eighteenth and nineteenth centuries . . . the North American Sasquatch community consisted mostly of working-class and lower-middle-class white males in their thirties and forties with outdoor experience . . . and modest or no college education." A virtually identical statement could be made about the



Escaping Mortality

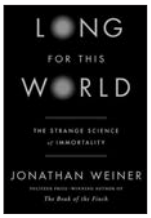
DANIEL GRASSAM

To any fan of science fiction, immortality is a familiar topic. Some sci-fi readers believe it's inevitable that we will one day achieve it; the more optimistic among them believe it will happen within their lifetimes. But as Jonathan Weiner discusses in *Long for This World*, the science of immortality might not be moving fast enough for this goal to be reached. Weiner spoke to a number of scientists from gerontology (the study of aging) and related fields for his book, but there is one scientist in particular who receives special treatment. That scientist is used to connect the others and all aspects of the book together. His name is Aubrey de Grey.

De Grey is a good choice for this pivotal role. He is outspoken and has a tendency to use visionary language that is inspirational and makes good copy. De Grey talks of 1,000-year-old humans and of humans achieving escape velocity from mortality. He alleges that "the engines of biomedicine are lifting us upward faster than the forces of decline and decay are dragging us down." Despite these outlandish claims, de Grey is no crackpot. Originally a computer scientist, he is now one of the leading theorists in longevity research. His approach favors Gordian-Knot style solutions to the slow progress of day-to-day science. He lays out some of these solutions in his Strategies for the Engineered Negligible Senescense (SENS), which aim to bypass the need for a full understanding of metabolism and instead focus on cleaning up "the detritus that metabolism lays down."

Weiner starts and ends the book with conversation with de Grey at a pub in Cambridge. In his description of this discussion Weiner displays some of his expressive style: "Through the windows of the Eagle, I watched the clouds part again above the tower of St. Benet's. The sun flared against the pub's windowpanes with the tawny light of August." In addition to the expressive language, Weiner uses personal stories of the scientists for embellishment. On one or two occasions these seemed too personal, crossing the line. Learning that Aubrey de Grey met his wife at a party is an interesting anecdote; indicating that they were physically intimate on that night is dispensable information.

With the amount of space dedicated to Aubrey de Grey, one could see de Grey as the protagonist of the War



Long for This World: The Strange Science of Immortality
By Jonathan Weiner.
HarperCollins,
New York, 2011.
ISBN: 978-0-076536-1.
310 pp. Hardcover, $27.99.

De Grey talks of 1,000-year-old humans and of humans achieving escape velocity from mortality. He alleges that "the engines of biomedicine are lifting us upward faster than the forces of decline and decay are dragging us down."

on Aging. Weiner portrays de Grey as a larger-than-life character who embodies the optimistic side of immortality research. But although he plays the lead role in the book, de Grey is not Weiner's hero. Weiner states clearly and repeatedly that he is not a disciple of de Grey and that "he and I were not of the same faith."

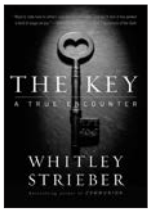
Weiner's use of terms like *disciple* and *faith* seem ordinary for the first chapter or two; then it starts to stand out. Weiner references the Bible extensively in the book. In reference to the length of time people may live, he states, "our descendants in another few generations may expect to live as long as Moses, who is said to have lived 120 years; Noah, who lived 950 years; or Methuselah, the oldest man in the Bible." Weiner does not state whether he accepts these stories as truth, but the language seems to indicate that he does. After discussing the fall of Adam and Eve, and therefore immortality, he writes, "We had it in our hands . . . and we lost it forever." In the index there are eight entries for Adam and Eve (as many as there are for James Watson and one fewer than the number of entries for Francis Crick.)

In addition to outlining some of the current research and challenges facing the science of aging, *Long for This World* also explores questions that the subject of immortality raises: How would it affect our humanity? Do we want to live forever? How much does death give meaning to life? Wouldn't we get terribly bored? There aren't answers to these questions; the material is intended to highlight that immortality is not for everyone and that utopia is not necessarily a consequence of eternal life.

Daniel Grassam writes from Auckland, New Zealand. E-mail: daniel@simonpure.co.nz.

He Sees Dead People

ROBERT SHEAFFER



The Key: A True Encounter
By Whitley Strieber. Jeremy P. Tarcher/Penguin Group, New York, 2011. ISBN: 978-1-58542-869-4.
256 pp. Softcover, $15.95.

In 1987, Whitley Strieber, already well known as a writer of fantasy and science fiction for *Wolfen*, *The Hunger*, and other tales, published the supposedly nonfiction book *Communion: A True Story* about his ongoing encounters with E.T.-like beings he calls "the visitors." It was on the *New York Times* bestseller list for many weeks, followed up by *Transformation* in 1988 and then by numerous other paranormal-themed books, some admitted to be novels, others not. Imagine if Steven King had written a masterful horror novel but claimed that all of the ghostly goings-on really happened to him, although he could offer no proof of any of it. That's where we stand with Strieber.

In *The Key*, Strieber writes, "My experience between 1985 and 1993 with creatures that appeared to be alien was associated with a surprising side effect, which was simultaneous contact with the dead, who would appear along with the visitors, and not as ghosts." What a pity he didn't mention those dead people when he wrote about the visitors in *Communion* and *Transformation*.

amateur ghost hunters and ghost-hunting groups that have proliferated over the past decade, due in large part to television shows like *Ghost Hunters*. If Bigfoot does not exist (and the evidence seems to suggest that conclusion), then perhaps the next most interesting mystery is why people believe it does and what motivates their search. Those who aren't Bigfoot buffs may find Regal's book too "in-house," but it is a brilliant, in-depth examination of those who search for Sasquatch. —B.R.

TRUE GIANTS: Is Gigantopithecus Still Alive? Mark A. Hall and Loren Coleman. Anomalist Books, New York, 2010. 174 pp. Softcover, $15.95. Writers Mark Hall and Loren Coleman address the question of whether or not stories and evidence of giant bipedal creatures (such as Bigfoot and the Yeti) might really be of *Gigantopithecus blacki*, the largest known ape in the world at up to nine feet tall. Coleman is of course well-known for his books on cryptozoology, and both authors do an admirable job of collecting information and lore about these "True Giants." The main problem is that the authors are assuming that the answer to the question in the book's title is yes. They note that "True Giants are still around.... They are living successfully beside human beings.... They have large hands and seem capable of making crude clothing and using simple weapons. They have engaged in some herding of animals ... and been associated with taking up some technological pursuits such as smithing." All this is interesting speculation and conjecture, but it's reminiscent of debates about the number of angels that can fit on the head of a pin. You can muster all the stories and folklore you like, but the inescapable fact remains that there is no scientific evidence whatsoever that the premise of the book—that *Gigantopithecus blacki* exist in modern times—is true. The best evidence shows that it died out as recently as 300,000 years ago, though Hall and Coleman suggest that the scientific evidence supporting the existence of True Giants has been ignored at least in part because "professional anthropologists are paralyzed by fear and ignorance." *True Giants* is a valiant and original attempt to make the case for the existence of these beasts based on little or no hard evidence. As an exercise in cryptozoological folklore it's interesting, but you don't need to be a scientist or a skeptic to realize that Hall and Coleman's case is never made. —B.R.

—Kendrick Frazier and Benjamin Radford

The Key begins in 1998, when Strieber claims a mysterious man unexpectedly knocked on the door of his hotel room late one night during a long and grueling book-promotion tour. Against his better judgment, he let in the man, who then proceeded to engage Strieber in "the best conversation I've ever had," which Strieber describes as "deeply, profoundly new" and "richly textured." What did this ordinary-looking man, who came to be called "The Master of the Key," have to say? Gems such as "The energetic body has a spin, or vibration. This can go infinitely fast. It can reach beyond the speed of light, and exit time altogether." And "All being includes all elements of the earth, and thus all are part of all bodies. We are the consciousness of the planetary level that it has spent all of its life evolving, each and all of us." It seems The Master would be on the fast track to a Nobel Prize in physics if it weren't for one disqualification: his admission that he is dead.

There is also some dark conspiracy about Mars that is only hinted at in such statements as "Mars was murdered by you." As for crop circles, they are "two dimensional portraits" created by dead people. The Master also warned, "Warmth being retained near the surface by greenhouse elements results in cooling aloft. A massive and extremely powerful convection can arise that results in a storm so great that it changes the climate permanently. The next ice age will begin soon, and this will lead to the extinction of mankind." (Strieber is the coauthor, along with the late-night conspiracy talk show maven Art Bell, of the ridiculous eco-disaster novel *The Coming Global Superstorm*, on which the movie *The Day After Tomorrow* is based.)

As you might surmise of a skilled storyteller, Strieber's Master walks out the door and disappears mysteriously into the night. Say what you want about Strieber's credibility, but he does know how to turn a fine phrase and spice up a story. Still, Strieber, The Master's ventriloquist, comes across as a rather loopy and preachy social activist—but as the late George Adamski surely realized, nobody would care about his political statements unless they actually came from the Venusians. And however preachy, at least The Master isn't as long-winded as John Galt of Ayn Rand's *Atlas Shrugged*.

Robert Sheaffer is the author of *UFO Sightings: The Evidence* (Prometheus Books, 1998). His blog is at www.BadUFOs.com.

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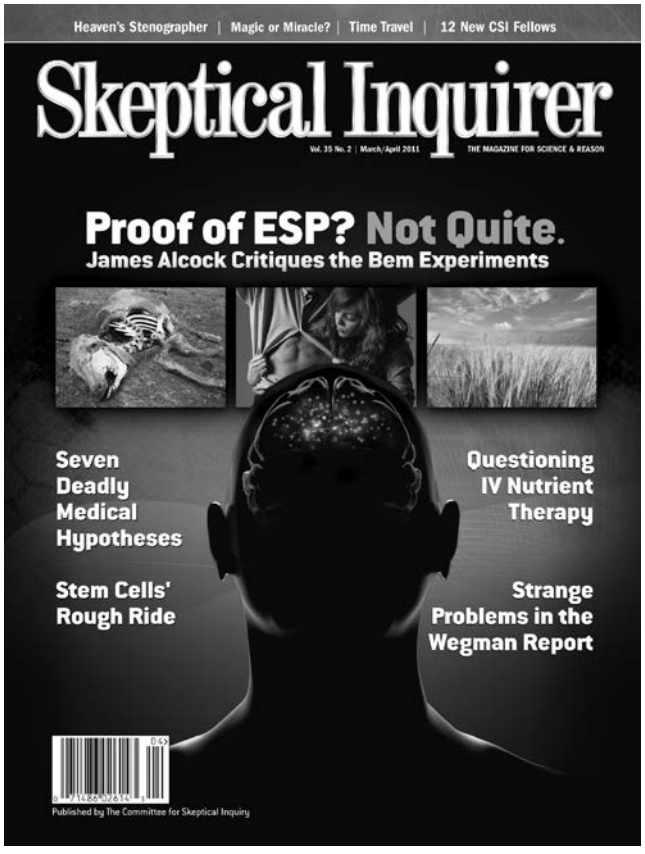
Heaven's Stenographer | Magic or Miracle? | Time Travel | 12 New CSI Fellows
Skeptical Inquirer
Vol. 35 No. 2 | March/April 2011
THE MAGAZINE FOR SCIENCE & REASON
Proof of ESP? Not Quite.
James Alcock Critiques the Bem Experiments
Seven Deadly Medical Hypotheses
Questioning IV Nutrient Therapy
Stem Cells' Rough Ride
Strange Problems in the Wegman Report
Published by The Committee for Skeptical Inquiry

Bem's Astounding Claims

Wow! Finally a psychic breakthrough with real impact (critiqued by James Alcock in "Back from the Future: Parapsychology and the Bem Affair," SI, March/April 2011)! Now that Daryl Bem has shown, unequivocally, that some psychics may sometimes be able to predict, with an accuracy that is sometimes better than mere chance, that an erotic image might appear on a computer screen, Christian Republican congressmen can now fund a much needed Federal Psychic Department of Homeland Decency.

Imagine the tremendous benefits to society when Salt Lake City housewives can receive e-mail messages such as:

> *Dear Mrs. Smith, the Psychic Department of Homeland Decency predicts, with an accuracy that exceeds mere chance, that there exists a reasonable likelihood that your son Joseph may very well attempt to view www.hotmormonhoneys.com sometime within the next 2 years or so, give or take some unknown parameters due to experimental error. Please take appropriate action.*
>
> *Sincerely, Charles Keating III*

Steve Aldrich
Aurora, Colorado

Seven Deadly Medical Hypotheses

I read Dr. Reynold Spector's "Seven Deadly Medical Hypotheses" (SI, March/April 2011) with interest. I am mostly concerned about his perpetuating the mythical danger of estrogen in menopausal women. He asserts "the well documented fact that estrogen is a carcinogen that causes breast cancers that kill women." Interestingly, the data from his reference (Chlebowski's WHI study) actually shows a protective effect from estrogen regarding breast cancer. The

question of breast cancer and hormone therapy needs much more study before anyone can claim a cause and effect. Even women who have been previously treated for breast cancer find a *lower* chance of cancer recurrence and mortality when prescribed estrogen for menopausal symptoms. Many studies have found overall decreased mortality in estrogen users compared to nonusers.

Finally, I would direct your readers to your May/June 2010 issue of SKEPTICAL INQUIRER. The article entitled "The Alarms of Hormone Replacement Therapy" (by Bluming and Tavris) is certainly more akin to the clear-thinking, skeptical thought process than Dr. Spector's misleading narrative.

James Kolter, MD
JKolter@aol.com

As a longtime skeptic, I'm unsatisfied by Dr. Reynold Spector's seemingly too-easy dismissals of a positive role of fresh fruits and vegetables in disease prevention. There is, of course, nothing "deadly" about eating multiple servings of fruits and vegetables, especially if they are replacing servings of burgers and fries.

Spector quickly dismisses more than one hundred epidemiology/observation studies from the 1970s and 1980 because they were, he says, "flawed studies." According to what evidence were they flawed? And is there general agreement in the medical community on that?

In addition to the general media, I regularly read some of the major health newsletters and journals produced by various medical groups and institutions, and I also routinely read summaries of research supporting the consumption of fruits and vegetables as reducing various health problems, including cancers. An article from *Men's Health* cites Vitamin D as helping the body to "detoxify and expel excess lithocholic acid before it can cause colon cancer" and describes a study published in 2008 in the *Journal of Oncology* that showed that taking Vitamin D improved survival among those who were already diagnosed with colorectal cancer. Not true?

Spector also claims that "No cancer-preventing phytochemicals have been found in fruits and vegetables." Really? Are all the articles I regularly read saying differently also flawed?

Reading Spector's article, poorly supported by presented evidence, is disturbing. Was this peer reviewed by other medical experts?

Robert J. Millar
Professor of Social Science
Reading Area Community College
Reading, Pennsylvania

See the Follow-Up section in the forthcoming September/October 2011 SI issue for more critical commentary on Spector's article. We also expect his reply in that issue. —EDITOR

God in the News Again

Mark Levy is right-on to state, "If you're a theist, you ought to acknowledge, at least occasionally, that God is responsible for terrible events as well as miraculous ones" ("God in the News Again," SI, March/April 2011). Along similar lines, I often wonder why, if God can make such miraculous saves during terrible occurrences, he, she, it, them, or whatever can't or won't intervene to prevent terrible things (accidents, diseases, wars, earthquakes, birth defects, etc.) from occurring before the fact.

Herman M. Heyn
Baltimore, Maryland

While reading Mark Levy's artful description of the profusion of praise that bystanders and unfortunate victims offer for some "inconsequential silver lining," I came to an explanation of this behavior slightly different from Levy's. Are they not saying (though not acknowledging to themselves): "This tyrant has struck again and has offered some small mercy so that I might praise him for all this suffering inflicted [he is that much of a tyrant! Indeed, a super-tyrant!]. And I must praise him in order to be spared the next blow. Furthermore [and perhaps this is a Christian twist with a further turn of the knife], since he is all-knowing and can see right into my heart I must be sincere in this praise so I have to even feel grateful! I must even deceive myself about this gratefulness." After a while of repeated practice of conjuring up feelings of gratitude from happy life events (birth of first child, etc.) the "sincere" feeling of gratitude becomes second nature at times of disaster.

Mike Petzold
Goulais River, Ontario, Canada

Responding to Mark Levy's report on God in the news, miracles do happen—or at least what appear to be miracles to us mortals who can only detect the most blatant of cause-effect relationships. A ten-year-old Dutch boy was the only survivor in a fiery air crash that killed 103 in Libya last spring. Conversely, only one died and 131 survived in the South American air crash that Mark Levy described. A bit of research uncovers fourteen other air crashes with a single survivor, in most cases a child, and numerous air crashes with multiple survivors. Searching for people who have fallen more than twenty stories and survived results in many hits. The same is true of searching for parachutists who survived jumps where the chute didn't open.

There are medical miracles too: complete remission of stage four cancer; eyesight restored after years of blindness. It doesn't happen every day, but it happens. It is difficult to blame those who benefited from these very improbable events for thinking they have been singled out by some divine force.

Nearly anything is possible. Unless probability is zero, it can and likely will happen over the course of billions or trillions of opportunities. We skeptics tend to ride the high probability curve and look askance at anything with very long odds. But we should acknowledge that however improbable, if probability is not zero it can happen and it doesn't take a divine hand to make it come to pass.

Robert Veitch
Minneapolis, Minnesota

Stem Cells' Rough Ride

Kenneth Krause's column "Religion on Politics on Science" (SI, March/April 2011) highlights another example of why religion cannot be rationally reconciled with the scientific worldview. The motives behind the judicial assault on stem cell research expressed in the Dickey-Walker amendment to provide legal protection for human embryos are totally religious. Human embryos, especially pre-embryos, are not persons by any rational definition and have a lesser claim to protection of their lives than fully developed existing persons (*Decoding the Language of God*, pp. 217–30). The research use of pre-embyro, i.e., voluntarily donated before fourteen days gestation when there is no brain, no nerves, no sensation, is morally defensible from a secular scientific point of view.

The Dickey-Walker amendment is an unconstitutional violation of freedom of conscience, and I agree with Krause that it ought to be repealed and not left to religious ideologies or an activist Supreme Court.

However, Krause's use of Francis Collins, who believes he has reconciled science with his faith in Jesus (as illustrated in his

book *The Language of God: A Scientist Presents Evidence for Belief*), raises some interesting points. First, Sam Harris and others expressed concerns about his appointment as Director of National Institutes of Health (www.project-reason.org/archive/item/the_strange_case_of_francis_collins2/). As a geneticist who had observed Collins for some time, I was less concerned and was not surprised by his testimony in favor of limited embryonic stem-cell research. As I demonstrated in detail in my book *Decoding the Language of God: Can a Scientist Really Be a Believer?* (2009), the possibilities feared by Harris remain a concern. For example, I am unaware of any statements Collins has made on abortion. Let us hope that he will continue in his official capacity to defer to science in any future conflicts.

George Cunningham, MD
San Francisco, California

Ryden's Impossible Claims

Joe Nickell's skepticism in his column "Heaven's Stenographer" (SI, March/April 2011) is justified. I am a master graphoanalyst (Certified by the International Graphoanalysis Society) who has studied handwriting for twenty-five years, and I have also mastered speed writing. Gregg shorthand and other methods of speed writing were created to enable people to write words on paper as fast as they are spoken. You need only look at the writing of Vassula Ryden to realize that it would be completely impossible to write script that perfect while jotting down words being spoken to her, even for a short while. Nickell reports that she takes four to six hours of "guided-hand dictation" in this script each day. As noted, the lines of writing sit perfectly on the lines of the paper; also the *T* bars are marked perfectly along the lines on the paper. Both of these characteristics would be absolutely impossible to render while taking verbal dictation.

Some traits shown in the writing, which I can only assume are traits belonging to Vassula Ryden herself, are extreme vanity, conservatism, self-consciousness, objectivity, no generosity, no enthusiasm, very little willpower, and lasting determination; a detailed person, she is creative, artistic, and keeps others at a distance. Maybe some of these traits could be attributed to God, but some would definitely be human traits.

Mary-Dean Phifer
Mount Sterling, Kentucky

Wegman's Kentucky Factor

In the second paragraph of his article "Strange Problems in the Wegman Report" (SI, March/April 2011), John Mashey mistakenly identifies Ed Whitfield as a U.S. Congressman from Tennessee. He is the representative from Kentucky's 1st Congressional District. Kentucky is a major producer of high-sulphur-content coal. This makes the basis for his interest in anything that debunks global warming more obvious. In the past, the state also spent untold sums in an effort to "prove" that acid rain is a myth and, prior to that, in the campaign to "clear up" any concerns about the connection between smoking and health risk. The congressman is thus the latest in a long and sordid history of anti-science activity. Mark Twain's famous observation about Kentucky still applies!

Jack B. Wood
Princeton, Kentucky

John Mashey replies:

I apologize to the citizens of Tennessee for mislabeling Whitfield as theirs.

On Time Travel

Massimo Pigliucci's column "On Time Travel" (SI, March/April 2011) reminds us once again of the physical and logical barriers that stand in the way of our dream of journeying into the past. As restricted as time travel may be, it is important to remember that these are limitations imposed on time travel but not on time viewing. No logical or physical restrictions prevent us from conceptually viewing the past. In fact we experience time viewing every day. For example, the bus coming toward you, as you wait at the corner, comes out of the driver's past into your present. So does your reflection in a mirror.

What we need to brainstorm as armchair "time viewers" is first a definition of exactly what it means for time to contain past information. Unfortunately, time is as vaguely defined as God, which makes it so easy to discuss in the abstract. It may be that time, as Julian Barbour asserts, is nothing more than a human-manufactured continuum, many knife-edged presents stored and sequenced as our brain's personal movie.

Second, we need to consider what kind of apparatus or process would be able to capture and create a continuous picture of non-local past events. Could we really intersect with the enormously complex pattern of photons that were once emitted from a prehistoric Neanderthal community or from the first farming village? If the visual evidence of an event travels in all directions, would our time machine's view be restricted to a narrow slice of the dawn of history?

Science fiction devotees will recognize the genesis of this quest as the basis of T.L. Sherred's engrossing novella *E for Effort.* And it may be that the dream of a time screen may forever be limited to the pages of fiction. Whether or not such a device could ever pass physics muster, and whether or not it could be constructed, is intriguing food for future articles. The point here is that there seem to be no logical impediments to us becoming viewers in time compared to the tortuous loops and flaws blocking any attempt to be travelers in time.

David Werdegar
Naperville, IIlinois

I was disappointed with Massimo Pigliucci's "On Time Travel." Why didn't he point out the virtual impossibility of time travel since it requires travel in space as well?

Everything is in rapid motion. Earth rotates, orbiting the sun, which orbits the galaxy, which heads who knows where. Considering only Earth's rotation, to time travel one hour ahead requires simultaneously moving some thousand miles to the east just to remain at the same location on Earth.

Even if it were possible to calculate where in space to go, and you (and your machine) could tolerate the g-forces for suddenly moving so rapidly so far, there remains the difficulty of locating your grandfather, or Plato, or Jesus, or whomever you might wish to visit. There's more: for example, if visiting somewhere 2,000 years ago, where were the materials of which you and your machine are composed?

Time travel is only a dream.

P.M. deLaubenfels
Corvallis, Oregon

'Ooooh.....Shiny!'

In Benjamin Wolozin's Commentary "Washington Rally to Restore Sanity a Plea for Sanity," (SI, March/April 2011), he wrote, "and finally, some [signs] were just nonsensical, such as one that stated, 'Ooooh .....Shiny!'"

It's not *quite* nonsensical; it's a catchphrase used occasionally by one of the principal characters in Joss Whedon's series *Firefly* and his movie *Serenity*

(specifically, by Kaylee Frye, the ship's engineer). It denotes something spiff, cool, neat, nice, wonderful, and/or just plain good, said with a certain amount of cheery innocence (as befitting the character).

Ted Eisenstein
Fayette, Missouri

A Revealing Magnifying Glass

I live in South Africa and have no affiliation to, or afflictions from, Isagenix, but I loved Dr. Hall's article "A Case Study in Flawed Thinking" (SI, January/February 2011).

I found it enlightening (and mildly disturbing) that she could make so many enemies by presenting a fair argument for scientific inquiry, rationality, sound judgment, and proof. Her writing was amusing, thought provoking, and entertaining, while repeatedly exposing the inability, and unwillingness, of humanity to simply think.

Thank you for a beautifully revealing magnifying glass.

Hans Beuche
Port Elizabeth, South Africa

Early Androids

To expand on part of Massimo Polidoro's excellent column "How to Make a Monster! The Legend of Creating Artificial Life: From the Golem to Pinocchio" (SI, November/December 2010), some early enlightenment attempts to build androids were in reality philosophical experiments. Jessica Riskin describes Vaucanson's construction of several automata as "attempts to discern which aspects of living creatures could be reproduced in machinery … and what such reproductions might reveal about their natural subjects" ("The Defecating Duck, or, the Ambiguous Origins of Artificial Life," *Critical Inquiry*, Summer 2003). For example, Vaucanson invented an automated flute player in 1738, in part to test his theory of the biomechanics and acoustics of flute playing. Riskin describes other eighteenth-century attempts to reveal nature's design of biological mechanisms by means of mechanical simulation, illustrating an erosion of Cartesian dualism in favor of "an emergent materialism and … a growing confidence … that experimentation could reveal nature's actual design."

Dudley and Tarnoczy, in their article "The Speaking Machine of Wolfgang von Kempelen (*Journal of the Acoustical Society of America*, March 1950), describe in detail a speaking machine built by Wolfgang Ritter von Kempelen in 1791, accompanied by a volume that made clear that he was attempting to scientifically describe the mechanisms of speech production. (The scientific value of Kempelen's efforts should not be tarnished by his chess-playing machine, which was a hoax—it had a small man hidden inside!) Erasmus Darwin, grandfather of Charles Darwin, made a simpler version of Kempelen's speaking machine in 1803. As Riskin explains, Vaucanson, Kempelen, Darwin, and others began a tradition of understanding nature by means of mechanical simulation that remains very productive today.

Charles Cairns
Ray Brook, New York

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[FEEDBACK

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Ask the Outlaw Skeptic

Where no question or answer is too stupid.

By Pablo DesOrmeaux

Hey Outlaw Skeptic,
Would *el chupacabra* make a good house pet?
—Animal Lover

Dear Animal,
Well, muchacho, let's look on the plus side: Since it's supposed to be hairless, there will be zero animal hair to clog up your vacuum cleaner. And you won't have to spend a fortune feeding the critter: you can simply let it run loose at night. It will in all likelihood find a goat or some other docile animal and suck its blood, and possibly entrails, for nourishment. (By the way, chupacabra *actually means "goat sucker" in Spanish and "a common dog with serious mange" in Skeptish.) And since* el chupacabra *is considered even uglier than a Chihuahua, gives off a sulfur-type odor, is covered in greenish-grey skin, and may sport sharp spines running down its back, there is no danger of having your beloved pet snatched off your front porch any time soon.*

On the negative side, well, there's not much literature on how to house train the little pup or much else about chupacabra *house pets for that matter. However, before actually purchasing a "chupa," be careful. There have been rumors floating around that some pet shops and online sellers have actually pawned off some coyote-canine hybrids—with bad cases of alopecia—as "genuine* chupacabras*" on more than one unsuspecting paying customer. In my unhumble opinion, I suggest you catch your own. Your best bet is to purchase a large Havaheart trap and stuff a blood-gorged goat into it as bait. Leave it outdoors for a few nights and see what transpires. And if you suspect you've actually trapped* el Chupacabra*, call me immediately! I know Oprah. Keep us posted, Pedro.*

HIDDEN MESSAGES by Dave Thomas

The following letters are a simple substitution cipher. If R stands for L, it will do so everywhere. Solution is by trial and error. Hint: look for patterns in words; for example, the scrambled phrase "JRXJ JRQ" might represent "THAT THE."

PUZZLE

"UPC BIIU IS REE GFACBGUHUHIJ HG UPRU XCJ ITGCBOC VPCJ R UPHJM PHUG, TFU JIU VPCJ HU XHGGCG."

—SBRJDHG TRDIJ

CLUE: M = G

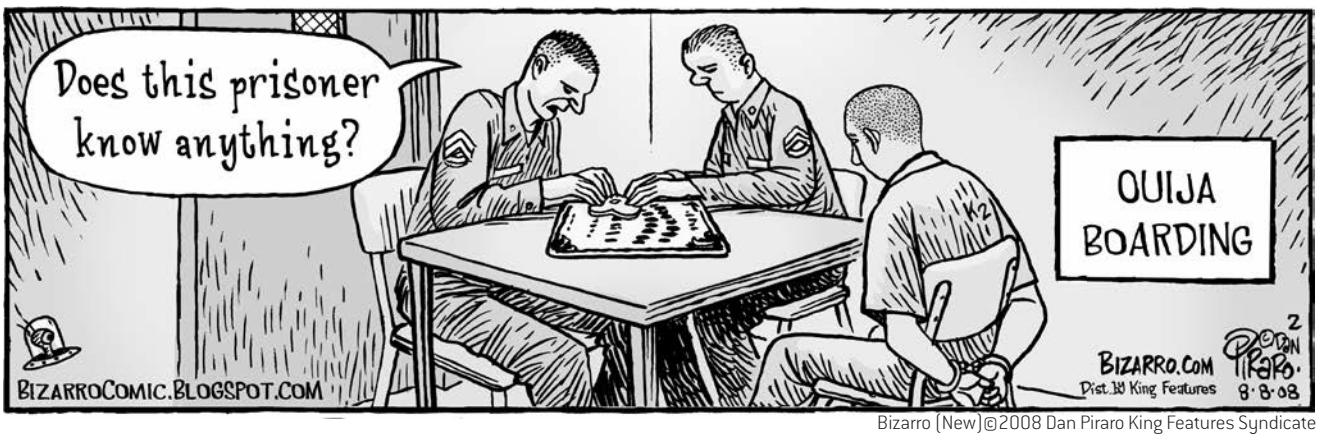
PREVIOUS PUZZLE SOLUTION (March/April 2011): *"THE ONLY REASON FOR TIME IS SO THAT EVERYTHING DOESN'T HAPPEN AT ONCE."*
— ALBERT EINSTEIN

SUPER-SECRET WORD: STORYLINE
(Instructions: www.nmsr.org/secretword.htm)

Hidden Messages Puzzle Contest

Submit your solution by e-mail to bradford@centerforinquiry.net or via postal mail to:
Benjamin Radford
The Last Laugh
P.O. Box 3016
Corrales, NM 87048
Winner will be chosen at random from the first three correct submissions received by both e-mail and postal mail.

This issue's prize: a signed copy of skeptic musician George Hrab's CD *Interrobang*



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The organizations listed above have aims similar to those of the Committee for Skeptical Inquiry but are independent and autonomous. Representatives of these organizations cannot speak on behalf of CSI. Please send updates to Barry Karr, P.O. Box 703, Amherst NY 14226-0703.

International affiliated organizations listed at www.csicop.org

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